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## ORTHOPEDIC SURGERY BETWEEN TWO WARS

CHAIRMAN'S ADDRESS

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CLEVELAND

At a time when human energy and resources are being consumed on a scale never before imagined in the frenzied production of instruments of destruction, carnage and chaos, it is easy to agree with the cynics and pessimists who contend that there is no real progress in the world and that what we call civilization is completely doomed. But if we ponder more carefully the things we know best and the changes that have been wrought in our thinking as well as the environment in which we live, we know that this is not true. Change is eternal, the law of life, and those changes that endure are always for the better. Sometimes progress is so gradual that we are not aware of it; sometimes it is hastened by spectacular and stimulating events.

It is well, especially when immediate happenings are conducive of despair, to stop and give our attention to the changes for the better, the evidences of progress, in whatever is most familiar to us, thus to gain assurance and faith that still greater improvement will be forthcoming in the future. With all the deplorable devastation of a world war, the resourcefulness and enterprise of human beings are then stimulated to their highest peak of efficiency and result in advances, particularly in scientific fields, that might not be produced in decades of peacetime effort paced at a slower tempo. As some one has said, "War is an evil thing but has done good, like a hormone, in activating the whole chemistry of the nation."

In no field of human activity is this more true than in medicine. A number of years ago my colleague Dr. William Lower summed up the medical experiences of the last war as follows:

> Those lofty abstractions Peace and Democracy, the stakes for which we gambled with so much money and so many lives, are not within reach of mortal men, but we brought home a consolation prize of medical and surgical experience that has brought increased physical comfort and security to patients everywhere. . . . Our experiences during the war have directly or indirectly influenced not only the practices in modern medicine but also its organization and professional personnel. We have reaped the advantages of the unparalleled opportunity accorded the officers of the medical units to observe large numbers of patients under the most trying of environments and to appreciate to the full the significance of such factors as emotion, fatigue, exhaustion, shock, exposure, temperature and anesthesia. Surgical skill and judgment were tested under unprecedented circumstances. We learned the physical and economic significance of minor ailments, neuroses, injuries and operations. And we were taught, above all, the great value of team work and efficient organization. These things constitute the beneficent effects of war.

Our own specialty of orthopedic surgery received its impetus from the last war, and now, when we are embroiled in another conflict, seems an appropriate time to contrast some of the practices then and now and thus to realize the extent of progress that we, or many of us, have witnessed in our own lifetimes. We are aware, of course, that we modify our methods now and then, but in the daily routine of rounds and operations we scarcely realize the extent of the change or give it proper evaluation.

The experiences of caring for the casualties of the present fighting, which present many problems different from those in the first world war, probably will yield a comparable stimulus to orthopedic practices and will usher in a new period of development in our specialty. Hence the period from the beginning of the last war to the present one represents the first epoch in the history of orthopedic surgery as a recognized specialty of medicine.

The Orthopaedic Association and also the Orthopedic Section of the American Medical Association were in existence in the United States before the last war, but there was no comparable organization in Great Britain, and Robert Jones and his associates were virtually the only orthopedic surgeons in England who were widely known. The orthopedists had been looked on with disdain by other members of the medical profession here and were called the "strap and buckle" surgeons, while Sir Robert had practically no status at all among certain of his confrères in England. He was derisively called a "bonesetter" despite his great surgical skill and the outstanding results he had achieved in caring for the cripples of Liverpool.

It is difficult to realize that such an attitude could have existed so recently toward the practice of orthopedics. It is hard to tell how long it might have persisted if it had not been for the war. Under serious opposition Robert Jones was entrusted with the establishment of the first military orthopedic service in any country, having two hundred beds at Alder Hey in Liverpool. The results were so striking that within a short period, thirty-three thousand beds were equipped and staffed with trained English and American orthopedic surgeons. As Lord Moynihan stated in the Robert Jones Birthday Volume:

> A few months experience [of the war] showed that a very large proportion of surgical work would fall within the province of orthopedics. At the head of the orthopedic department at

From the Cleveland Clinic.

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the War Office, Robert Jones found his destined place. He became the guide, the counselor, the example to a large band of workers, who quickly assimilated his teaching and were able to practice it on a scale hitherto unimaginable. The genius of Owen Thomas, the skill of Robert Jones, found their highest expression in service to our wounded. The methods of these two previously little known, and rarely practiced, . . . now became the heritage and enjoyment of all who cared to seek acquaintance with them.

According to Goldthwait, 65 per cent of the casualties in the last war were orthopedic cases, and by the time of the armistice 569 officers had served with the Orthopedic Division of the American Expeditionary Forces. This group worked in the closest cooperation with Sir Robert Jones and the British group in efforts at standardizing procedures and equipment, and these experiences contributed later to maintenance of certain standards in orthopedic practice on both sides of the Atlantic Ocean.

Having had such a stimulus in the first world war, the specialty of orthopedic surgery has thrived greatly until now we have more than seven hundred certified specialists. The spirit of Sir Robert still lives in the hearts and minds of those who came within the glow of his presence and learned humbly to love him, and his disciples have perpetuated and multiplied his gifts to humanity.

In a limited time it will be impossible to furnish any kind of comprehensive review of the many individual contributions to orthopedic practice which have developed in this period between the great wars. I choose rather, with a deliberate attempt to stand off at an objective distance and to gain some perspective on modern developments, and thus, in the light of general principles which endure throughout the changing fashions of practice, to try to interpret general trends, particularly in certain problems of greatest practical interest. When one strives for such a view, it becomes obvious that many controversial questions resolve themselves into a secondary place and that rivalries among protagonists of different technics become relatively insignificant, since often these rivals are proceeding from the same principle and striving toward the same result.

This brings to mind Herbert Spencer's classic comments on scientific research, which seem worth repeating at this time:

> The efforts of numerous independent seekers carrying out their researches in different directions constitute a better agency for finding the true method than any that could be devised. Each of them struck by some new thought which probably contains more or less of basis in facts—each of them zealous on behalf of his plan, fertile in expedients to test its correctness, and untiring in his efforts to make known its success—each of them merciless in his criticism of the rest—there cannot fail, by composition of forces, to be a gradual approximation of all toward the right course. Whatever portion of the method any one of them has discovered must, by the constant exhibition of its results, force itself into adoption; whatever wrong practices he has joined with it must, by repeated experiment and failure, be exploded. And, by this aggregation of truths and elimination of errors, there must eventually be developed a correct and complete body of doctrine. Of the three phases through which human opinion passes—the unanimity of the ignorant, the disagreement of the inquiring and the unanimity of the wise—it is manfest that the second is the parent of the third.

And so it seems to me that many of the problems of orthopedic surgery are at present in the stage of apparent disagreement because of the search for true knowledge, which is a wholesome sign, and the final agreement is not so far off as we may think.

## COMPOUND FRACTURE

One of the most challenging problems to be faced by the orthopedic surgeon, even in peacetime, is that of compound fracture and its complicating osteomyelitis. In war, with the great number of casualties of this type, the interest in these cases increases. There is ample evidence in the current literature that much thoughtful attention is being accorded to these problems, and there are numerous technics and agents for dealing with them which were not available to us in the first world war. The validity of these new methods will be judged finally on the results they achieve, and these are dependent, in turn, on their adherence to the cardinal principles, which is to say on nature's laws.

Although our great surgical teachers have constantly reiterated that the aim of all good treatment is to aid the healing process of nature, this cannot be repeated too often, in view of the evidence that so many practitioners, in their zeal for one method or another, or in exercising their own surgical virtuosity, lose sight of this fact. The crux of the problem in compound fractures, as well as simple fractures, for that matter, is rest and immobilization, and in compound fractures the picture is complicated by the presence of infection. No one has stated the matter more clearly than John Hunter, for he said:

> The only peculiarity in compound fracture by which it differs from other lacerated wounds is the breach of continuity of the bone, which admits of motion in the part where none was intended. This singularity it is which requires a peculiarity in the treatment, as this motion and the operations of nature are in contradiction to each other. A variety of inventions have been employed to prevent this motion; but the dressing of the wound every day counteracts the effect of every invention that has been thought of, and it is perhaps impossible to dress the sore without motion.

That is the problem which has faced us in the treatment of compound fracture, and too often in the past emphasis on some detail of method has obscured the main issue. The controversy regarding asepsis versus antisepsis, to which the surgeons of the last generation gave so much attention, is a case in point. Up to and during the first world war the emphasis was placed on a search for the ideal antiseptic; that is, an antiseptic that might inhibit germ growth without damaging the tissues. The Carrel-Dakin method was hailed by many as the answer to all these searches. There was great enthusiasm for attempts to sterilize the wound with constant irrigations of the solution, but there was still so much disturbance of parts, so much damage to the wound surface and so many accidental secondary infections that the results were disappointing. Much of the difficulty arose through concentration on the antiseptic treatment of the infection to the exclusion of the still more important factor of rest.

The futilities of some of these practices and controversies of the past we can all comprehend in the light of present experience. It may not be quite so easy to see that our own controversies, which hinge on such things as the relative value of this or that metal used in fixation, of one technic of immobilization as

opposed to another, of one sulfonamide drug or another, of whether sulfonamide drugs should be given by mouth or packed into the wound and, significantly enough, persistent overtones of asepsis versus antisepsis, may be based on similar misconceptions and similar oversight of fundamental principles.

This is not to minimize the importance of all these developments. I believe they are extremely significant and that the individuals who have promulgated them, in their persistent search for truth and knowledge, deserve the highest praise. To appreciate them fully, however, we must examine them in their relation to fundamental laws rather than in their relation to one another. To do this is encouraging, for then comes the realization that modern methods, however they vary in technical detail, exhibit an awareness of the natural laws and a comprehensive understanding of the ends to be achieved in therapy.

An outstanding example of a thorough study and application of fundamental principles is represented by the work of Orr. His insistence on rest and immobilization, with emphasis on asepsis, rather than antisepsis, is responsible for the technic of treating compound fractures and osteomyelitis, which has already had a major test in the present war, first in Spain and later in Britain. Orr has emphasized that immediate reduction of the fracture and the adjacent soft parts and adequate immobilization of all parts in correct position are the primary essentials. With the parts in correct position and at rest, the operation of debridement and alinement of fracture may be carried through with a minimum of further damage. Thorough drainage is established and petrolatum dressings are packed into the open wound, and then the immobilizing device which is to carry the patient through to recovery is applied. No postoperative dressings are done in the usual sense. If immobilizing devices become inefficient, if discharge is profuse or if odor becomes unendurable, dressings are changed, usually in the operating room without disturbance of the part and with a minimum of damage to the wounded surface.

With the use of this method in combination with skeletal fixation, Trueta reported but six deaths in 1,073 cases of gunshot fracture treated during the Spanish Civil War. Wilson, in describing the results of Rodger-Anderson fixation and the closed plaster method at the American Hospital in Britain, has pointed out that the comfort of the patients was an impressive feature. The only discomfort was from the odor, and this was more distressing to the doctors and nurses than to the patients.

Many of us have had sufficient experience with this method, or some modification of it, to be struck by the contrast between it and the cumbersome Carrel-Dakin technic. I can recall, during the last war, the tremendous labors in caring for patients with compound fractures, the formidable array of tubes and dressings, the emergency calls at all times of the day or night when something went amiss, and the terrible suffering endured by the patients in the process. When one looks back and contrasts those experiences with the results of modern methods, one realizes that great progress has been made, because the patients are more comfortable, the course of recovery is more rapid and not only are the results better in respect to alinement of fractures and more rapid union but also infection is controlled and the wounds heal more rapidly.

In discussing the treatment, Wilson has said:

> What is the secret of the Orr-Trueta treatment? It can only lie in the thoroughness of applying that great surgical principle of rest, which is so frequently disregarded in other methods of wound treatment. Rest favors the walling off of infection and the local defensive and reparative forces. The smooth and uniform compression of the extremity by the plaster is also important in preventing the development of edema in the region of the wound and maintains a better circulation in the extremity. Finally, the sealing off of the wound in plaster of paris and the infrequent dressings prevent or reduce the cross contamination of wounds which recent bacteriologic studies show inevitably occurs when dressings are changed frequently, even with the observation of the most careful aseptic technic.

The advocates of bismuth iodoform paraffin paste, so-called bipp, which was introduced during the last war, have pointed out the similarities between this method and the Orr treatment and have shown considerable concern over questions of priority. Those who have used bipp extensively are enthusiastic about it, and it does indeed utilize essentially the same principles as the closed plaster method, although its development followed a different approach. Bipp was introduced as the result of constant search for a better antiseptic, and the claim is made that it furnishes a constant supply of nascent iodine to the wound and thus obviates the necessity for constant dressings. Hence the desired result, rest, is achieved, and the satisfactory results reported by its users show that this has been an important contribution in offering additional proof that the details of method and the agents employed are secondary to the primary principles on which the results depend.

Modern methods of treating compound fractures have been greatly advanced by improved methods of skeletal fixation and also by the use of new metals for internal fixation of the bone fragments. These devices have been combined with the closed plaster method and with the use of sulfonamide drugs, with variations in technical details, and each is important in that it contributes to rest, immobilization and control of infection. This is not the place to go into detail regarding the various methods of skeletal fixation or internal fixation. There have been controversies as to the relative merits of each. As I see it, each has its own value in contributing to the better care of compound fractures, and the choice of the particular technic is governed by the findings in the individual case as well as by the experience and skill of the individual operator in one or another method, which naturally governs his preference. When internal fixation can be applied, it is a valuable and satisfactory method, but in many war casualties this is not practicable, and external fixation must be used.

In the problem of internal fixation, Venable and Stuck have made a great contribution in their studies on the use of vitallium, an alloy of chromium, cobalt and molybdenum. They have shown by physiologic experiments that this metal is inert to the action of tissue fluids, and hence many applications can be made that are not possible with other types of metal. There have also been significant advances in the development of new types of steel for this purpose.

It cannot be repeated too often that the principles of importance in the treatment of compound fractures are rest, immobilization and control of infection. Let us continue to improve the metals and apparatus used and to invent additional gadgets if they serve a useful pur-

pose, and let us investigate the relative merits of the new drugs being developed so rapidly in the field of chemotherapy, and let us take advantage of all the advances that are being made in other fields of medicine and surgery. But let us do so without slavish adherence to the details of one technic or another, but with understanding of its principles and interpretation of them in the light of fundamental laws.

## NEW METHODS

The importance to orthopedics of developments in other fields of medicine and also in the basic sciences of physics and chemistry should not be overlooked. All knowledge is of one piece, and progress made in one segment has its effect in many other fields. The outstanding recent example of this is the development of the sulfonamide preparations and their constantly expanding uses affecting all types of cases. Their contribution in the treatment of compound fractures has been amply demonstrated, both when administered by mouth and when applied to the wound. As the work of Caldwell has shown, the time factor, that is, how soon the drug is implanted, is of paramount importance in control of the infection. When these drugs are used, the danger of gas bacillus infection, which was such a horror in the last war, is reduced to the point where it is practically negligible. Although much is still to be learned about their exact mode of action, it seems assured that their outstanding performance is due to a local bacteriostatic effect.

Methods of aiding the natural process of repair and healing, such as transfusions and nutritional factors, have been most important in treatment of compound fractures as well as other orthopedic conditions. If the patient is fortified by vitamins and transfusions and never has to suffer the debilitating and exhausting effects of serious infection, his progress is more rapid and his convalescence shortened. The control of shock by the use of transfusions removes many of the hazards of surgery and makes possible more extensive and radical procedures in many instances. The important studies made by the biochemists in devising methods for the preparation and storage of plasma have constituted a real contribution to surgery and orthopedics.

Advances in roentgenology have also contributed to the better treatment of fractures, by more accurate visualization of the injury to the bone, making possible a thorough check on the proper alinement of fragments. Physical therapy methods have undergone much refinement and study during the past decade and have been valuable in extending the applications of rest, heat and various forms of radiation, and in contributing to the preservation and restoration of function.

I have devoted considerable time to discussing compound fractures, because attention is focused on this problem in time of war and because the advances that have been made illustrate so nicely the question of general principles. Many other problems in orthopedics might be similarly examined. One that comes to mind immediately is the interest centering on the Kenny treatment of poliomyelitis, which is forcing reexamination of previous concepts, resulting in new study of the pathologic processes involved and hence of the type of treatment desirable in the early stages of the disease.

The list of new methods, introduced since the last war, which represent great progress in the treatment of various conditions is long, far too long to be discussed here. But I cannot refrain from mentioning a few outstanding examples. The methods of stabilization of the paralytic foot introduced by Dunn in England and by Hoke in this country by fusion of the bones, rather than by tendon transplantation, have marked a great advance in the treatment of infantile paralysis. The work of Hibbs, wherein the natural process of fusion of the diseased joint in tuberculosis is aided by extra-articular grafts, and the demonstration by Rollier of the great importance of sunlight in these cases, have revolutionized the care of tuberculous patients. The internal fixation of fractures emphasized by Sherman, Murray and Smith-Petersen has been a splendid contribution. With the Smith-Petersen method the treatment of a fractured hip has become a relatively simple procedure in which good results can be confidently expected. Arthroplasty operations have been greatly improved on knees and elbows by the work of Campbell and on the hip by the use of the vitallium cup, as advocated by Smith-Petersen. Finally, reference should be made to the outstanding work of Bonnell in the treatment of tendon injuries by removable wire sutures. These are only a few of the significant improvements in methods that have been developed in orthopedic surgery since the first world war.

Thus, when we examine the advances in orthopedic practices in the light of general principles, we have reason to feel that we have been moving steadily forward and that much satisfactory progress has been made. The members of our group have been quick to realize the value to our work of new developments in other fields and to devise specialized applications of them. And they have been striving unceasingly to improve the methods, apparatus and operations that belong peculiarly to orthopedic surgery.

When these new technics are observed with sufficient perspective and objectivity, it is obvious that they all tend in the direction of adherence to fundamental precepts. Some of us, in our enthusiasm for one method or agent, at times fail to see the merit in some other technic which may be regarded as competitive and engage in controversy which gives more attention to details than to principle. In the long run, however, these differences will prove insignificant, for even now it is evident that they are more apparent than real. Such differences of opinion are inevitable and essential to the progress of investigation and inquiry, but they are shadows which disappear in the clear light of truth and certain knowledge.

## THE FUTURE

The specialty of orthopedic surgery, then, may be said to have had its origin in the throes of a great war and, through the impetus of the necessity thrust on it at that time, to have made great strides, which have constantly been developed in the intervening years. Thus we are able to face the problems presented by a new conflict with many new tools and methods, which will no doubt be developed with great rapidity during this war. A considered view of the past era gives us much hope for the future, and we can look ahead with calm assurance that progress and betterment are inevitable. "Tribulation worketh patience; and patience, experience; and experience, hope."

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# PAIN AND DISABILITY OF THE SHOULDER AND ARM

## TREATMENT BY INTRAMUSCULAR INFILTRATION WITH PROCAINE HYDROCHLORIDE

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When a patient presents himself with the common complaint of pain in the shoulder region and arm, with or without limitation of motion and unrelated to severe trauma, the physician usually thinks of the joints, bursae, tendons or nerves rather than of the shoulder girdle muscles as the primary source of pain. Thus the customary diagnosis in this type of patient is either arthritis, subacromial bursitis, brachial neuritis or radiculitis. The well known chronicity of these symptoms and the variety of therapeutic procedures employed suggest either that the customary methods of treatment are unsatisfactory or that the underlying cause is often overlooked. It is our purpose in this report to discuss the diagnosis of a type of pain in the shoulder and arm which has its origin in the muscles of the back or shoulder girdle and to present the results of an effective method of therapy, namely intramuscular infiltration with procaine hydrochloride.

The rationale for this type of therapy is based on several observations. First, it has long been recognized that many instances of "painful shoulder syndrome" present tender areas in the muscles around the shoulder ("periarthritis"). Second, it has been demonstrated that tender areas in muscles may cause pain not only locally but also referred to other somatic structures. The characteristics of referred somatic pain have been studied experimentally by Kellgren and Lewis.[1] In this connection the term "trigger zone" was used by Edeiken and Wolferth,[2] since in 2 instances of "painful shoulder syndrome" pressure on a tender area in the suprascapular region increased the radiation of pain in the arm. Steindler and Luck[3] demonstrated the role of "trigger points" in the muscles of the lower part of the back as sources of pain referred to the leg; injection of procaine into these tender points abolished not only local tenderness but also referred pain. The third observation that recently encouraged the therapeutic application of procaine by the intramuscular route was an empirical one. Steindler[4] found that this technic was valuable not only in allocating the source of pain but also as a therapeutic procedure in "sciatica."

The literature at present indicates greater enthusiasm for this technic in the treatment of pain in the lower than in the upper extremity.[5] Following his earlier observations on the injection of procaine into "trigger points" in the lower back muscles, Steindler fails to mention this technic in connection with the treatment of the "painful shoulder syndrome."[6] Although reports of isolated cases have appeared which advocate intramuscular infiltration with procaine for pain and disability of the shoulder and arm,[7] no systematic investigation of this technic in this condition is available. It seemed to us, therefore, that the possibilities of this method of therapy had not been sufficiently explored in relation to the "painful shoulder syndrome."

### DIAGNOSIS

*Description of Cases.*—A group of cases coming to our attention because of the outstanding complaint of persistent pain in the shoulder region showed on examination the presence of tender points in various muscles of the shoulder girdle. Fifty-eight cases were selected for treatment and form the basis of the present report. The patients were, with a few exceptions, ambulatory. About two fifths had hypertensive and arteriosclerotic cardiovascular disease, one fifth had pulmonary tuberculosis and two fifths had general medical complaints. The medical group was comprised of 5 patients with chronic sinusitis, 2 with hypothyroidism, 1 with Paget's disease, 1 with wet beriberi and 16 in whom the shoulder syndrome was the only apparent abnormality. There were 37 males and 21 females. Two patients were colored, 1 was Chinese. The ages ranged from 29 to 78 years; the average was 55 years. About one third of the patients had both shoulders involved; the right shoulder was the one involved in 51 per cent and the left in 40 per cent of the 76 affected shoulders. In approximately one third of the shoulders, pain had been present for less than two months before treatment, in one third for from two to eleven months and in one third for a year or longer. A variety of occupations, both sedentary and extremely active, was represented, and, with perhaps a few exceptions, no relation to the shoulder pain was apparent; one third of the patients were unemployed. The onset was gradual in most instances. The precipitating factors appeared to be manifold and included physical fatigue, chilling, infection, trauma, confinement to bed or a period of relative muscular inactivity, and poor posture, especially a tendency to become "round shouldered."

Somatic pain elsewhere than in the shoulder and arm was a complaint in 38 per cent of the cases. Acute pain arising in trigger points in muscles in these other regions usually was dramatically relieved by intramuscular infiltration with procaine, and an enthusiasm for the general application of this type of therapy for pain of muscular origin, expressed especially in the British literature, seems to be entirely warranted.[8]

The distribution of pain in the upper extremity varied. It was usually most intense over the front or back of the deltoid region, was occasionally felt in the scapular region and frequently radiated to the forearm and hand, in which paresthesias were sometimes present. Rest pain was present in 72 per cent of the cases. Pain was always elicited or increased by active motion and was associated in about three fourths of the cases with limitation of active motion at the shoulder joint. The

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most common type of limitation was difficulty in placing the hand behind the back; this was noted in all but 1 instance. The distribution of cases according to the severity of pain and limitation is shown in table 3. There were no neurologic changes.

*Trigger Points and Pain Radiation.*—All the cases presented one or more "trigger points" [8] or "myalgic spots." [9] Such an area is more resistant than the surrounding muscle and is excruciatingly tender on strong pressure. It is usually not identical with the site of spontaneous pain. Pressure on the area may increase or elicit pain in the reference zone. Either active contraction or passive stretching of the muscle in which the trigger point is located may induce referred pain. Not only pain but also tenderness and weakness of the muscles in the reference zone may be pronounced. This is in line with the demonstration [10] that stimuli arising in a muscle or ligament can provoke not only pain but also tonic contraction of muscles at a distance having the appropriate segmental distribution; hence the phenomena customarily described as "referred" may actually be the result of reflex changes in the so-called reference zone.

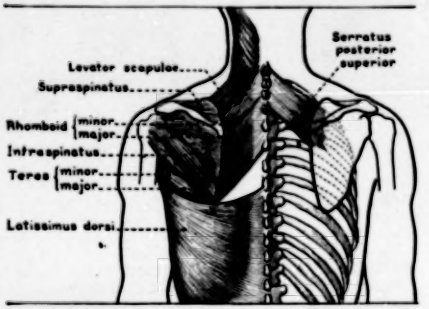


Fig. 1.—The left side shows the shoulder girdle muscles with the trapezius and deltoid muscles removed. The right side shows the overlapping of the serratus posterior superior muscle by the scapula in ordinary posture.

Trigger points were found in various muscles in the shoulder girdle or back, and it seems likely that any muscle innervated by the spinal segments from the fifth cervical to the first thoracic may cause radiation of pain to the upper extremity. The vast majority of cases presented between two and four such trigger points.

The muscle that most often caused pain in the shoulder region and arm was the serratus posterior superior. A tender point in this muscle was present in 57 of the 58 cases, or in all but 1 of the 76 shoulders affected. In 8 cases it was the only primary source of pain. The trigger point was usually located in the upper lateral portion of the muscle and was partially covered by the scapula (fig. 1). In order to expose it for palpation and injection, the scapula was retracted and its upper part rotated laterally by placing the hand in the opposite axilla, depressing the shoulder and flexing the spine. The radiation of pain from this muscle is shown in figure 2 *A*. The referred pain is most intense over the long head of the triceps brachii at the posterior border of the deltoid; it often extends to the entire triceps region, occasionally to the ulnar border of the forearm, the palm and fourth and fifth fingers of the hand, and the pectoral region, and less frequently to the spinous processes of the upper two or three thoracic vertebrae. It is possible that the variations in pain radiation from this muscle depend on variations in its anatomic structure; one or more of the slips are frequently absent.[11] Muscles in the reference zone which have the same segmental innervation as the trigger point in the upper part of the serratus posterior superior, namely the eighth cervical and first thoracic,[12] include the pectoralis minor and major, triceps brachii, extensor and flexor carpi ulnaris, flexors of the digits, muscles of the little finger and deep muscles of the hand.

Next in frequency as a source of referred pain was the infraspinatus (fig. 1). A tender point was found in this muscle in half of the affected shoulders. The radiation of pain from this muscle (fig. 2 *B*) is quite constant; it is most intense over the front of the shoulder and the long head of the biceps and may extend down over the entire biceps to the brachioradialis muscle. These muscles, like the infraspinatus, are innervated by the fifth and sixth cervical segments. The reference of pain from the infraspinatus to the "shoulder tip" has also been noted by Kellgren.[13]

A number of less frequent but clear-cut reference patterns were observed from trigger points in other muscles of the shoulder girdle. In general, the radiation of pain was in agreement with the somatic reference zones which Kellgren and Lewis have mapped out for single spinal segments.[1]

*Differential Diagnosis.*—The minimal criteria for the diagnosis of shoulder and arm pain due to "idiopathic myalgia," on the basis of which infiltration with procaine may be undertaken, are (1) increased pain on active motion, elicited either by a quick or sustained effort, and (2) tender points in the muscles of the back or shoulder girdle. Reproduction of the spontaneous pain pattern by pressure on the tender point and limitation of motion are valuable signs when present but are not essential to the diagnosis. Confirmation of the presumptive diagnosis is usually secured by the therapeutic test of infiltration of the myalgic points with procaine.

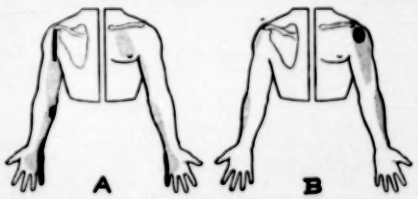


Fig. 2.—*A*, radiation of pain from the serratus posterior superior muscle; *B*, radiation of pain from the infraspinatus muscle.

The conditions from which this syndrome should be differentiated include:

1. Abnormalities of the bones and joints, such as fractures, dislocations, cervical rib, and arthritis. These are readily demonstrated by roentgen examination.

9. Gutstein-Good, M.: Lancet **2**: 326, 1940.
10. Lewis, T., and Kellgren, J. H.: Clin. Sc. **4**: 47, 1939.
11. Gray, H.: Anatomy of the Human Body, Philadelphia, Lea & Febiger, 1930, p. 402.
12. Spalteholtz, W.: Hand-Atlas of Human Anatomy, Philadelphia, J. B. Lippincott Company, 1923, p. 307.
13. Kellgren, J. H.: Clin. Sc. **3**: 175, 1938.

2. Subacromial bursitis. A true acute bursitis may be recognized by the usual signs of inflammation, especially local swelling.[14] The mere presence of a calcific deposit in the region of the subacromial bursa is not a sufficient basis for the conclusion that the symptoms are caused by a chronic bursitis. Such deposits may exist for years without pain.[15] In our series calcification in the shoulder region was noted in 3 of 27 patients having roentgen studies and did not influence the results of therapy (fig. 3). The frequent reference of pain to the deltoid region from the muscles of the shoulder girdle and the occasional presence of a primary source of pain in the deltoid muscle itself explain the frequency with which a diagnosis of chronic bursitis is pinned on the patient with shoulder pain and disability due to foci in the muscles.

3. Scalenus anticus syndrome. This is characterized by pain in the upper extremity and neck, signs of venous obstruction, vasomotor changes and, if severe, evidences of arterial insufficiency and damage to the motor and sensory nerves.[16] It is apparent from certain cases in our series that pain due to involvement of the scaleni can result not only from neurocirculatory compression but also from trigger points located in the scaleni muscles themselves; the referred pain extends to the biceps, radial border of the forearm and proximal interphalangeal joints and is associated with an inability to close the fingers. Evidence that in these cases the pain is referred is afforded, first, by the lack of objective signs of compression and, second, by the correspondence of the segmental radiation of pain with the innervation of the scalenus anticus muscle (the fifth to the seventh cervical segments). When frank signs of brachial plexus compression are manifest, pain is present chiefly in the ulnar distribution (eighth cervical and first thoracic), because of the greater impingement of the scalenus anticus muscle on the lower rather than on the upper fibers of the brachial plexus.[17]

4. Neurogenic disorders, including compression of the brachial plexus from any cause, brachial neuritis, radiculitis and spinal involvement of the spinal cord. These causes of pain and disability of the upper extremity may usually be discovered by a complete neurologic examination. In our series, the diagnosis of shoulder pain of muscular origin was overlooked in 1 case in which there were residual signs of an old hemiplegia on the affected side; prompt remission of pain and restoration of motion followed infiltration of trigger points in the shoulder muscles with procaine.

5. Coronary artery pain. The frequent association of acute coronary thrombosis and angina pectoris with intractable pain in the arm and limitation of motion at the shoulder has been noted.[18] Thirteen of our patients had effort angina and/or myocardial infarction. Although the similarity in the radiation of pain from trigger points in the serratus posterior superior (fig. 2*A*) to that of effort angina is obvious, patients had no difficulty in distinguishing between pain of somatic and of cardiac origin. The differentiation depends not on the distribution of pain but on the presence either of constant rest pain, which is aggravated by some motion of the arm or, if rest pain is absent, of pain on motion or limitation of motion at the shoulder joint, and on the finding of trigger points in the scapular region.

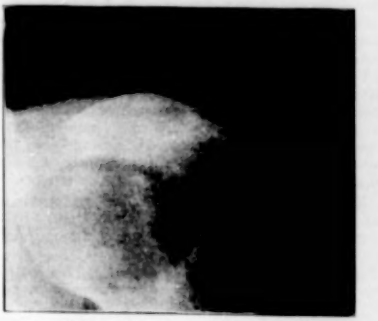

Fig. 3.—A calcific deposit in the region of the right subacromial bursa of a stenographer aged 28 who had moderately severe (2+) pain in the right shoulder joint and deltoid muscle of three weeks' duration. The pain was completely relieved by a single treatment in which 12 cc. of 1 per cent procaine hydrochloride was injected into tender points in the infraspinatus, serratus posterior superior and levator scapulae muscles.

6. Vascular disorders of the upper extremity, such as embolism and thrombosis. The picture is generally so striking that it rarely presents a diagnostic problem.

## TECHNIC

*Material.*—A 1 per cent aqueous solution of procaine hydrochloride without epinephrine was used in most instances. In 2 cases treatment with a 0.7 per cent solution was successful. In a few isolated observations a 0.5 per cent solution seemed not to be as effective as higher concentrations. Control infiltration with isotonic solution of sodium chloride was ineffective.

*Procedure.*—The maximum point of tenderness was located with precision. This was facilitated by putting the muscle "on the stretch" and by the use of strong pressure. The cooperation of the patient is essential in locating points of tenderness exactly. It has been recognized that "blind" injection in the hope of infiltrating a trigger point by chance is usually ineffective.[19]

After a small intradermal wheal had been made a sufficient amount of procaine solution was injected to abolish local tenderness. Usually 2 to 5 cc. sufficed for a given site. If the first injection failed to secure the desired result, the area was reinjected at a different level.

Referred pain was often induced momentarily and was helpful in demonstrating the accuracy of injection. If the muscle was infiltrated slowly, little pain was produced. That the primary focus of pain had been reached was indicated by disappearance or diminution in rest pain or improvement in active motion within a few minutes after injection. Frequently an immediate sensation was felt in the arm, described as heaviness, deep

14. Hitzrot, J. M.: Ann. Surg. **98**: 273, 1933.

15. Bosworth, B. M.: Calcium Deposits in the Shoulder and Subacromial Bursitis, J. A. M. A. **116**: 2477 (May 31) 1941.

16. Reichert, F. L.: Compression of Brachial Plexus: The Scalenus Anticus Syndrome, J. A. M. A. **118**: 294 (Jan. 24) 1942. Theis.[17] Spurling and Grantham.[20]

17. Theis, F. V.: Surgery **6**: 112, 1939. Spurling, R. G., and Grantham, E. G.: J. Missouri M. A. **38**: 340, 1941.

18. Howard, T.: M. J. & Rec. **131**: 364, 1930. Boas, E. P., and Levy, H.: Am. Heart J. **14**: 540, 1937. Ernstene, A. C., and Kinell, Jack: Pain in the Shoulder as a Sequel to Myocardial Infarction, Arch. Int. Med. **66**: 800 (Oct.) 1940. Askey, J. M.: Am. Heart J. **22**: 1, 1941. Lerch, C. B.: Rhode Island M. J. **21**: 104, 1938. Edeiken and Wolferth.[3]

19. Moynahan, E. J., and Nicholson, E. S.: Brit. M. J. **1**: 65 (Jan. 17) 1942.

seated numbness or coldness, which was especially noticeable after infiltration of the serratus posterior superior.

If the patient's tolerance permitted, as many points as possible were injected at each visit in an attempt to render the patient entirely free from pain and limitation.

*Dosage.*—The amount injected at any one visit was usually between 10 and 20 cc. of the 1 per cent solution. An initial test dose of 1 to 2 cc. was given to patients not known to have received procaine previously. The maximum amount at any visit was 100 cc. given over a period of two hours. It is stated that 50 cc. of a 1 per cent solution represents a conservative amount to secure local anesthesia in operative procedures;[20] it should be noted that in this case much of the material is given subcutaneously. Owing to rapid absorption from the intramuscular route, the susceptibility of the patient to minor toxic effects usually limited the dose to not more than about 5 cc. every five minutes.

*Reactions.*—No serious procaine reactions were encountered in a total of two hundred and fifty-four visits, in spite of the fact that many of the patients had

TABLE 1.—*Results of Treatment in Various Clinical Groups*

| Group | Total Cases | Average Age, Years | Limitation of Motion, Cases | Pain and Limitation of Motion | | |
|---|---|---|---|---|---|---|
| | | | | Complete Relief, Cases | Improvement, Cases | No Relief, Cases |
| Cardiovascular | 23 | 61 (41-78) | 19 (83%) | 14 (61%) | 7 (30%) | 2 (9%) |
| Pulmonary | 10 | 47 (33-63) | 8 (80%) | 5 (50%) | 4 (40%) | 1 (10%) |
| Medical | 25 | 52 (29-72) | 15 (60%) | 17 (68%) | 7 (28%) | 1 (4%) |
| All types | 58 | 55 (29-78) | 42 (72%) | 36 (62%) | 18 (31%) | 4 (7%) |

a low cardiac reserve. In cases presenting effort angina, the repeated injection of procaine was not associated with the appearance of coronary artery pain.

Immediate minor toxic effects were noted at some time in approximately 40 per cent of the cases. These effects were transient and usually lasted only ten to twenty minutes. They included dizziness, talkativeness, partial deafness, a sensation of constriction of the throat, and thirst. One patient, known to have asthma, had an attack of asthma which was readily controlled by epinephrine. The same type of reaction was generally observed at different times in the same patient. Dizziness was the most common one and, unless severe, was considered not as a contraindication to further injection of procaine but rather as an indication for lengthening the interval between doses. The speed of administration is an important factor in determining the toxicity of procaine because of its rapid destruction by the liver.[21] At a fairly uniform rate of infiltration, it was apparent that the individual susceptibility was more important than the total dose of procaine in determining the appearance of minor toxic effects. For those patients who never had a reaction at any visit the average maximum dose was 19.4 cc., and the range was 5 to 100 cc.; for those who showed a reaction, the average was 28 cc., and the range, 5 to 60 cc.

Late reactions consisted only of pain or tenderness in the area infiltrated and increased pain in the reference zone. The severity and duration of these after-effects varied greatly and were not predictable.

Signs of sensory or motor nerve paralysis were not observed following injection of the shoulder girdle muscles. There was also no evidence of penetration into the pleural cavity.

*Frequency of Injection.*—Owing to the facilities of the clinic, it was usually possible to treat patients only at weekly intervals. To a few hospitalized patients, treatments were given more often, even daily. The optimum interval for repeated infiltration of a given site may differ in different cases; it probably ranges from about four to ten days.

*Interim Treatment.*—As adjuncts to procaine infiltration, the medication included only the occasional use of analgesics, ascorbic acid 75 to 200 mg. daily in 5 cases in which soreness after infiltration presented a problem and wheat germ 30 Gm. daily in 8 cases in which generalized myalgia was present. It is our impression that ascorbic acid was of value in reducing local reactions, owing perhaps to the effects of this vitamin on the speed of tissue repair.[22] Wheat germ given in this dose over long periods was, in our opinion, of no benefit.

Other therapeutic procedures were the application of local heat as desired (electric pad, hot water bottle) and the encouragement of active motion of the arm within the limits of pain. Passive motion was not used routinely because it seemed to increase pain.

## RESULTS OF TREATMENT

Complete relief of both pain and limitation of motion was secured by this technic in 62 per cent of the cases, moderate to considerable improvement in 31 per cent and little or no relief in 7 per cent (table 1). The results are essentially the same for patients with cardiac or pulmonary disease and those without intrathoracic disease. The average period of observation of those patients who obtained complete relief ranged from one to sixteen months; the average was 5.4 months.

Complete relief of limitation of motion occurred somewhat earlier and in a slightly higher percentage of the affected shoulders than did complete remission of pain, namely in 70 and 62 per cent respectively. The average number of treatments which abolished limitation was 2.6, and that which abolished pain was 3.5. Complete relief of limitation was secured by one treatment in 36 per cent of the 50 shoulders presenting restricted motion, whereas complete relief of pain was obtained by one treatment in only 12 per cent of the 76 affected shoulders. Improvement in active motion was always attended by diminution of pain.

The average number of treatments per affected shoulder was 4.2 (table 2). As a rule, improvement was immediate and dramatic. Of the 72 painful shoulders in which complete or partial relief was obtained, definite diminution in pain occurred after the first treatment in 64 instances, after two treatments in 5 and after three treatments in 1 instance. This suggests that if definite improvement is not apparent after about three treatments, it is probably not worth while to continue this method of therapy.

The duration of the shoulder pain before treatment definitely influenced the results of treatment (table 2).

20. Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941, p. 298.

21. Hatcher, R. A., and Eggleston, Cary: J. Pharmacol. & Exper. Therap. 8: 385, 1916.

22. Lund, C. C., and Crandon, J. H.: Human Experimental Scurvy, J. A. M. A. 116: 663 (Feb. 22) 1941.

Of 23 shoulders affected for less than two months, regardless of the severity, nearly all secured a perfect result, and in 9 instances only one treatment achieved this. In the groups affected for from two months to a year or for more than a year, a perfect result was achieved in only about half of the affected shoulders, and in not a single instance did one treatment suffice to attain this. However, the degree and speed of recovery was about the same whether the duration before treatment was several months or a few years.

The relation of the severity of pain and limitation of motion to the results of treatment is shown in table 3. When the limitation was slight (1+) normal motion was nearly always restored, whereas when there was extensive limitation (2+ and 3+) this result was achieved in only about 60 per cent of the shoulders; this difference appeared in spite of the fact that the proportion of those having involvement for less than two months before treatment was lower for the mild than for the severe grades of limitation. The severity of the pain also appeared to be a factor in the outcome, since a perfect result was obtained in 69 per cent of the shoulders exhibiting the lesser degrees of pain (1+ and 2+), as compared with 53 per cent of those exhibiting very severe (3+) pain; it should be noted that the proportion of those having involvement for less than two months was higher for the group with the poorer result.

Failure to secure relief occurred in 4 cases. In 1, the pain was of extremely long duration (thirty years); treatment was discontinued because of pronounced dizziness and increased pain after infiltration. In 1 case, failure was attributed to inaccessibility of trigger points located anterior to the scapula, and in 2 cases, possibly to an error in diagnosis, since roentgenograms showed extensive osteoarthritis of the spine, although inaccessibility of the points may have been a factor in these cases also.

One reason for the fact that about a third of the patients secured striking improvement but not a perfect result was inadequate treatment. Another was a tendency toward recurrence, which suggested that the factors which originally precipitated the symptoms were still in operation, such as occupational strain of the arm or the presence of the chest deformity of chronic emphysema. Another factor was the character of the pain. In a few cases, the tender points in the muscles gave rise to local rather than to referred pain, as shown by the fact that procaine abolished pain only at the site of injection and not at a distance. These cases were unusual in that the amount of limitation was out of proportion to the severity of the pain, that is, pronounced restriction of motion was associated with pain only on motion and not at rest. Contrary to other observations [23] the relative degree of localization and of reference of pain did not depend on the depth of the primary source of pain beneath the body surface. These facts suggest that different pathologic processes may be represented in muscles which behave differently with respect to the degree of reference of pain and to the speed of response to this type of therapy.

The high degree of success which we have achieved by this method of treatment of the "painful shoulder syndrome" is probably attributable to (1) identification of new trigger points, (2) recognition of the specific referred pain patterns from different trigger points, (3) avoidance of infiltrating areas of referred pain and tenderness and (4) persistence in injecting all primary sources of pain. The trigger points in the serratus posterior superior and infraspinatus muscles, which we have found to be the most frequent sources of shoulder and arm pain, are not indicated in the charts of "myal-

TABLE 2.—*Relation of Duration of Shoulder Pain Before Treatment to Results of Treatment*

| Duration, Months | Total Shoulders Involved | Complete Relief of Pain | | | Improvement in Pain | | No Relief of Pain | |
|---|---|---|---|---|---|---|---|---|
| | | Number of Shoulders | Secured by One Treatment,* Shoulders | Average Number of Treatments | Number of Shoulders | Average Number of Treatments * | Number of Shoulders | Average Number of Treatments * |
| Less than 2 | 23 | 21 (91%) | 9 | 2.8 (1-10) | 2 (9%) | 2.5 (1, 4) | 0 (0%) | ..... |
| 2-11 | 29 | 12 (41%) | 0 | 4.2 (2-10) | 16 (55%) | 5.5 (1-18) | 1 (4%) | 3 |
| 12 or longer | 24 | 13 (54%) | 0 | 3.9 (2-7) | 8 (33%) | 6.6 (3-15) | 3 (13%) | 4 (3-5) |
| All periods | 76 | 47 (62%) | 9 | 3.5 | 25 (33%) | 5.7 | 4 (5%) | 3.8 |

* The term treatment is used to indicate a single visit at which one or more myalgic areas were injected.

gic spots" or "common focal points of pain and tenderness in myalgic states" at which local analgesic injections are given.[24]

Assuming that a correct diagnosis of "idiopathic myalgia" has been made and that the primary sources of pain and their referred pain patterns are recognized, there still remain certain limitations to this method. Difficulties may be encountered because of (1) low tolerance to procaine, (2) poor cooperation of the patient in locating the myalgic points owing to deafness, a language difficulty or temperament, (3) inaccessibility of the primary sources of pain, that is, their location in the subscapularis or serratus anterior muscles in front of the scapula, (4) continuance in operation of the precipitating factors, (5) chronicity, (6) multiplicity of points and (7) a high degree of local rather than of referred pain.

## MECHANISM OF PROCAINE ACTION

Since the nature of the myalgias is obscure, the mechanism by which procaine permanently relieves pain and restores motion is of necessity unknown. Although generalized or localized pain and tenderness in the muscles is most often designated as fibrositis, myositis or fibromyositis, there is evidence that this condition may not be inflammatory in origin: the temperature, blood sedimentation rate and blood count are usually

23. Kellgren.[5]
24. Steinbrocker,[3] first reference. Gutstein-Good.[9]

normal, and in some instances biopsies of the painful, indurated muscle areas have not revealed signs of inflammation.[25] It is possible that the fibroblastic proliferation which has been observed in other cases is secondary to a functional disturbance and occurs only if the latter persists for a period of time. The meager pathologic data relating to this condition have been recently reviewed.[26]

One theory as to the mechanism of the lasting therapeutic action of procaine is that the temporary abolition of pain permits an increased range of motion and a consequent breaking of adhesions and absorption of exudates.[19] This implies that the limitation of motion is due to a structural lesion and that permanent relief of pain is the result of the improvement in motion. This mechanism would not apply to the relief obtained in those cases characterized by rest pain without restriction of motion.

TABLE 3.—*Relation of Severity of Pain and of Limitation to Results of Treatment*

| | Pain | | | Limitation of Motion | | |
|---|---|---|---|---|---|---|
| | | Complete Relief | | | Complete Relief | |
| Severity * | Total Shoulders | Number of Shoulders | Duration Less Than 3 Months, Shoulders | Total Shoulders | Number of Shoulders | Duration Less Than 3 Months, Shoulders |
| 1+ | 26 | 18 (69%) | 6 (33%) | 26 | 23 (88%) | 6 (26%) |
| 2+ | 16 | 11 (69%) | 3 (27%) | 19 | 11 (58%) | 3 (27%) |
| 3+ | 34 | 18 (53%) | 10 (55%) | 5 | 3 (60%) | 3 (100%) |
| All degrees | 76 | 47 (62%) | 19 (40%) | 50 | 35 (70%) | 12 (37%) |

* Pain: 1+ pain only on motion.
2+ moderate rest pain.
3+ severe rest pain.

Limitation (active motion) in any direction:
1+ restriction less than 25 per cent of normal range.
2+ restriction 25-75 per cent of normal range.
3+ restriction greater than 75 per cent of normal range.

Another theory, advanced by Leriche,[27] is that a disturbance of the sympathetic nervous system causes localized vasoconstriction within the muscles, which results in ischemic pain.

A third and, it seems to us, the most plausible hypothesis is that the pain is the consequence of a sustained spasm of the skeletal rather than of the arterial musculature, which likewise results in ischemic pain. According to this view, limitation of motion is primarily a reaction to pain rather than the result of a structural lesion. If muscle spasm causes pain, and pain reflexly produces muscle spasm, a self-perpetuating, pain-producing cycle might be established under certain conditions which would explain both the chronicity of the symptoms and the mechanism of cure by procaine. In this case procaine injected intramuscularly would break the vicious cycle by relaxing the localized muscle spasm, by virtue of its action in blocking afferent nerve impulses or by its curare-like action at the motor end-plates.[28] That the former action alone is sufficient to interrupt the cycle is suggested by the permanent relief of pain in the upper extremity, secured in some cases following brachial plexus block [29] or suprascapular nerve block.[30] Failure of brachial plexus block in other cases might be explained by the fact that at this site of injection procaine does not block the intercostal and suprascapular nerves which supply the serratus posterior superior and infraspinatus muscles. In the case of suprascapular nerve block, improvement would be anticipated only if the primary focus of pain were located in the supraspinatus or infraspinatus muscles. Another therapeutic procedure which is sometimes effective in the myalgias is strong sustained pressure applied directly on the tender point in the muscle which serves as the source of referred pain (Libman maneuver). The mechanism of action of this procedure has not been explained but may be analogous to that of procaine in interrupting tetanizing motor discharges, since it has been shown that 25 pounds pressure per square inch will block motor nerve fibers; the small sensory nerve fiber is more susceptible to the action of procaine than is the large motor fiber, whereas the reverse applies to the effect of pressure.[31] The relief of pain and limitation of motion by ethyl chloride applied to the skin over the tender muscles [32] might be explained by a similar mechanism, since local anesthesia of the skin produces relaxation of the skeletal muscles having the same segmental innervation, presumably by altering the tonic impulses.[33] It is noteworthy that all these varied procedures which relieve pain in the upper extremity have in common the effect of relaxing muscle.

## SUMMARY AND CONCLUSIONS

1. Treatment by intramuscular infiltration with procaine hydrochloride was carried out in 58 cases exhibiting pain in the shoulder region and arm. These cases were characterized by tender points in the muscles of the back and shoulder girdle, by increased pain on active motion of the arm and in about three fourths of the 76 affected shoulders by limitation of active motion at the shoulder joint.

2. Full restoration of motion and complete remission of pain were secured by this technic in 62 per cent of the patients; 31 per cent showed improvement, and no relief was observed in 7 per cent. Complete relief of pain and disability was obtained in 91 per cent of those whose symptoms had been present for less than two months.

3. The results of procaine infiltration were similar whether the "painful shoulder syndrome" occurred in patients with heart disease, with pulmonary tuberculosis or without intrathoracic disease. This suggests that this type of pain in the upper extremity is not dependent on visceral impulses.

4. The therapeutic effect of procaine infiltration indicates that in these cases the pain in the shoulder and arm is the direct result of impulses arising in one or more foci in the muscles of the back or shoulder girdle. The restriction of motion is primarily a reaction to pain. The term "idiopathic myalgia" best describes the syndrome.

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# TREATMENT OF CARCINOMA OF THE CERVIX WITH INTERSTITIAL RADIATION

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In 1898 Wertheim introduced the principle of extended radical abdominal panhysterectomy for the treatment of carcinoma of the cervix, but this procedure carried with it a high mortality. Good results were obtained only when the disease was discovered in an early stage. Soon after this, radiation was used, x-rays in 1902 and radium in 1906. The early results obtained from x-radiation alone were very poor, owing at least in part to the failure to penetrate the tissues deeply. In fact, the first favorable reports of the treatment of this disease with radiation came from the use of radium alone.

The method most frequently used in applying radium has been that in which it is placed in the uterine canal and in the vagina against the cervix. For the great majority of patients in whom one or both broad ligaments have become involved the central portion of the disease may be destroyed, but actively growing cells at the periphery receive inadequate irradiation.

A strong difference of opinion exists concerning the frequency of involvement of the parametrial lymph nodes. Palpation alone cannot be depended on to detect small invaded nodes. Sandler,[1] extracting from the literature only cancers of earlier stage treated by surgery in which complete serial sections were made, reported involvement in 33 to 51 per cent of the patients studied. Taussig [2] states that he has found 15 to 25 per cent with involvement of the lymph nodes in stage 1, and up to 60 per cent in stage 4 cancers.

The problem is essentially one of delivering lethal amounts of radiation to the outermost parts of the diseased areas. Attempts to solve this have been made through the use of high voltage external x-radiation, the development of new types of intravaginal and intrauterine applicators, the use of interstitially placed radium, and a method that is a combination of the others.

With the advent of equipment capable of producing high voltage radiation, external irradiation was again tried and occasionally good results are obtained through its exclusive use. But it seems generally agreed that this method alone is unacceptable provided there seems to be any chance of curing the patient.

Stevenson was the first to report the successful use of interstitial radiation in carcinoma of the cervix. In 1919 Daels began to apply radium to the pelvis after exteriorizing the area by surgical operation. In 1922 Delporte and Cahen reported on the intra-abdominal application of radium. In the United States Ward was among the first to use radium interstitially in the cervix, and since then there have been many who have used some type of interstitially placed radiation, either radium element needles or radon, for the treatment of this disease. Pitts and Waterman [3] report good results by interstitially placed long needles containing small amounts of radium. While at first they opened the abdomen for such application, more recently it has been done entirely by the intravaginal approach. Gellhorn [4] began to apply radium interstitially by the intra-abdominovaginal route in 1930. In 1934 and the years following Healy and his associates [5] called attention to the inadequate amount of radiation reaching points several centimeters distant from the cervix. In 1938 Arneson [6] described his method of applying radium interstitially in the treatment of carcinoma of the uterine cervix.

In January 1933 we began the treatment of carcinoma of the cervix by interstitial radiation applied with the abdomen opened. The method we are now using and are reporting is an elaboration of the technics previously described. Every patient with a condition as serious as carcinoma of the cervix should have treatment carefully outlined before any is undertaken. This calls for a rather complete physical examination and biopsy to the end that the extent of the disease will be known as accurately as possible. In most instances a cystoscopic examination is indicated—in some, a proctoscopic examination—and a lesser number require other x-ray diagnostic studies. An initial blood count should be made, and if any anemia is present this should be repeated a number of times during the course of the treatments. If after such procedures are carried out it is considered that the patient is in sufficiently good condition to warrant an attempt at cure, roentgen treatment is begun and the following factors are used: 200 kilovolts, 50 cm. skin target distance, Thoraeus filter, half value layer, 1.7 mm. copper filter; 200 roentgens is given daily to two ports anterior and three ports posterior, each field being 10 by 15 cm., anterior and posterior ports being alternated. This is continued until the skin shows definite irradiation effects. The anterior ports generally receive 2,000 to 2,400 roentgens and the posterior ports about 1,800 to 2,000 roentgens.

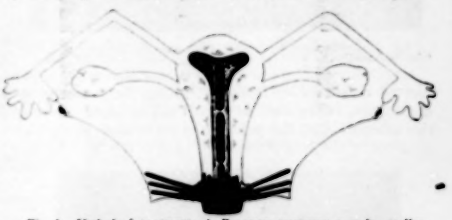

Fig. 1.—Method of treatment: 1. Roentgen treatment precedes application of radium by four weeks. 2. Abdominal exploration and application of radium by the interstitial and intracavitary method.

| | Radium Needles | | Radium Tubes |
|---|---|---|---|
| Radium content | 1 mg. | 2 mg. | 13.33 mg. |
| Active length | 15 mm. | 21 mm. | 15 mm. |
| Filter | 0.5 mm. of platinum | 0.6 mm. of platinum | 1.5 mm. of platinum |
| Time | 200 hours | | 200 hours |

From Jeanes Hospital.

Read before the Section on Radiology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1942.

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3. Pitts, H. C., and Waterman, G. W.: Surg., Gynec. & Obst. **64**: 30-38 (Jan.) 1937.
4. Gellhorn, George: Am. J. Surg. **27**: 422-424 (March) 1935.
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After the roentgen treatment has been completed four weeks is allowed to elapse before the radium is applied. The application is made under a general anesthetic, with the patient in the lithotomy position. The abdomen is then opened through a lower midline incision, and the abdominal contents are explored both

Fig. 2.—Anteroposterior view of pelvis showing position of radium tubes and needles.

for the extent of the disease and for the presence of metastases. Very often adhesions will be found between the intestine and the pelvic structures that should be separated. Especial attention is paid to the iliac region,

Fig. 3.—Lateral view of patient shown in figure 2.

and if any enlarged glands are felt they are removed. It has been our practice to remove both tubes and ovaries at this time. A bimanual examination is then made with the left hand grasping the uterine fundus while the fingers of the right hand are inserted into the vagina. In this way it is possible further to determine the extent of the involvement and plan the distribution of the radium. The cervical os is gently dilated sufficiently to admit the intrauterine applicator, which is put in position after the radium element needles have been implanted.

Generally nine or ten 1 mg. radium element needles are placed at the periphery of the cervix parallel to the cervical canal and approximately 1 cm. apart (fig. 1). These are filtered by 0.5 mm. of platinum, are 21 mm. long and have an active length of 15 mm. Two to four 2 mg. needles are placed in each broad ligament beginning at the periphery of the cervix and extending outward and backward to the pelvic wall.

The proximal ends of these needles are placed about 1 cm. apart. Each is threaded with fine monel metal wire to facilitate its removal. A rubber tube with a wall thickness of 2 mm. containing two to four radium tubes in tandem is placed in the cervical and uterine canal in such a manner that the highest tube contains

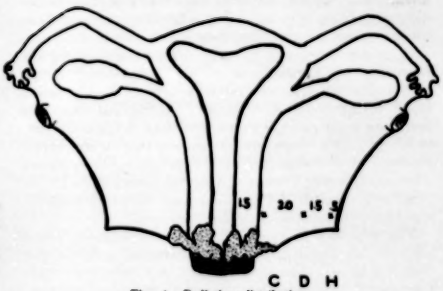


Fig. 4.—Radiation distribution.

Distribution of gamma roentgens concentric to tubes and needles:

A

| Approximate Number of Roentgens (Gamma) | | | |
|---|---|---|---|
| Needles | Tubes | Total | Location |
| 8,500 | 37,000 | 45,500 | O, uterine applicator |
| 17,000 | 7,000 | 24,000 | C, needles about uterine applicator |
| 9,000 | 13,000 | 22,000 | A, halfway between needles and uterine applicator |
| 4,000 | 3,000 | 7,000 | L, 1 cm. beyond needles or a cylinder of tissue 5 cm. in diameter |

Distribution of Gamma Roentgens to Points in the Pelvis

B

| Approximate Roentgen Dose from Ring of Needles, Uterine Tubes and Needles in the Broad Ligaments | C | D | H |
|---|---|---|---|
| 10 1 mg. needles, active length 1.5 cm., 0.5 mm. of platinum | 17,000 | 1,500 | 800 |
| 2 tubes, active length 6.0 cm., 1.5 mm. of platinum | 7,000 | 5,000 | 1,500 |
| 4 needles, active length 3.6 cm., 0.5 mm. of platinum | ..... | 10,000 | 4,000 |
| Total number of gamma roentgens | 24,000 | 16,700 | 6,300 |
| Total number of x-ray roentgens | 1,000 | 1,000 | 1,200 |
| Total gamma and x-ray roentgens | 25,000 | 18,500 | 7,500 |

13.33 mg. of radium while the remainder contain 6.66 mg. of radium. The filtration of the tubes is 1.5 mm. of platinum and their length is 21 mm. Their active length is 15 mm. It is desirable to have the

radium tubes extend throughout the entire length (fig. 2) of the uterine cavity. Gauze containing sulfanilamide crystals is then packed into the vagina in such a manner that the bladder and rectum are pushed as far as possible away from the radium. A self-retaining catheter is placed in the bladder. Following this gowns

Fig. 5.—Anteroposterior view showing position of radium tubes and needles.

and gloves are changed and the abdomen is closed in the usual manner. The radium is left in position for approximately two hundred and sixty hours. An x-ray examination of the patient's pelvis, both anteroposteriorly and laterally (fig. 3), is made to ascertain the position of the radium containers.

It is surprising to find that patients are not more uncomfortable while the radium is in place, and it may be removed without the use of an anesthetic. Daily douches of potassium permanganate 1:5,000 are given following the removal of the radium.

At the completion of the treatment the patient has had a total of 2,000 to 2,400 roentgens of external radiation to each of two anterior ports, 1,800 to 2,000 roentgens to each of three posterior ports and about 10,000 milligram hours of radium, all of which is given in a period of six to eight weeks. However, these figures in themselves mean little, so in an attempt to understand better the amount of radiation reaching various points in the pelvis one of us (J. W.) has computed the approximated dosage reaching pelvic points using the curves published by Patterson and Parker.[7] Figure 4 indicates the dose reaching pelvic points which is close to that (fig. 5) described by Sandler.[8] From this it can be seen that the amount of radiation reaching the pelvic wall at least equals that estimated by Patterson and Parker as being necessary to kill cancer cells.

The central portion of the cervix receives approximately 45,500 gamma roentgens and the amount reaching points where the needles are placed 24,000 gamma roentgens; this corresponds closely to point *C*, which is 15 mm. lateral to the cervical canal.

From the radium alone, 16,700 gamma roentgens reaches point *D*, 35 mm. from the cervical canal, while 6,300 gamma roentgens reaches point *H*, 5 cm. from the cervical canal and 5 mm. from the pelvic wall, a point which represents the position of some of the lymph nodes at the pelvic wall. If one then adds the number of x-ray roentgens to the gamma roentgens, one has a total of 25,900 at *C*, 18,500 at *D* and 7,800 at *H*.

Sandler has estimated the amounts of radiation reaching pelvic points by various technics, and it is seen that our technic enables one to deliver to the pelvic wall about as much radiation as his best figures (Manchester technic) show. According to his figures, the amount reaching *C* is 21,300, *D* 9,300 and *H* 4,950.

It is believed that the advantage in our technic lies in the fact that the size of the vagina has little influence on the treatment, while in the Manchester intracavitary technic it is most important.

From Jan. 1, 1933 until Jan. 1, 1942 we treated 52 patients who had carcinoma of the cervix. Several had very extensive disease. The primary healing of the cervix has been remarkably good. Little sloughing has been encountered and then only in the stage 4 cancers. No permanent damage to the bladder or rectum has been noted, although several patients have experienced a temporary proctitis. We have recognized no ureteral injuries. One patient had an elevated temperature for weeks, apparently due to low grade pelvic inflammation which may have been set up by the implantation. Some of the abdominal incisions have been slow in healing.

Of the patients that we have so treated 23 are dead: 15 died within one year of treatment and 7 died between one and two years after treatment. One lived three years. Twenty-nine are living. One is alive and well for more than eight years. Three are well after four years and 10 are living and well one year or more. There are 15 living less than a year after treatment.

The number of patients and the length of time involved, as well as the fact that at first nearly all the

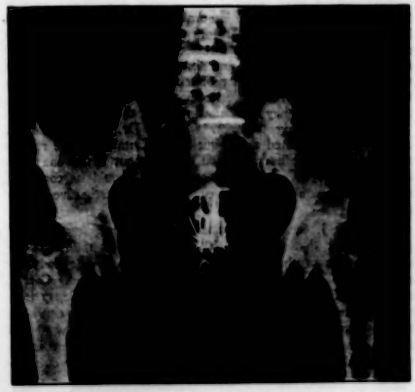

Fig. 6.—Anteroposterior view showing position of radium tubes and needles.

patients treated had very advanced carcinoma, make it impossible to give a picture in percentages that adequately indicates its value. The immediate response to treatment has been better than we experienced with the intracavitary method, which had been used before this. We now use it in all our stage 2 and stage 3 and in some stage 4 cancers.

7. Patterson, R. S., and Parker, H. M.: Brit. J. Radiol. 7:82 (Oct.) 1934.
8. Sandler, B.: Brit. J. Radiol. 14:284-293 (Sept.) 1941.

We have used a method of interstitial and intracavitary radiation supplemented by external x-irradiation for the treatment of carcinoma of the cervix and its extensions whereby in the patient of average size an amount of radiation considered cancericidal reaches the lateral pelvic wall without increasing the dosage at and immediately adjacent to the cervix to such a point that necrosis of tissue is produced.

## ABSTRACT OF DISCUSSION

DR. A. N. ARNESON, St. Louis: In this interesting report on the treatment of cervix cancer, the aim has been to improve the amount of radiation reaching the outlying tumor bearing regions. To accomplish that both x-rays and radium were employed with the addition of laparotomy at the time of radium treatment. It is difficult to understand how laparotomy will contribute materially to improvement in doses delivered by radium. It is obvious that by intra-abdominal palpation combined with vaginal examination one can gain a more accurate interpretation of the extent of the lesion. The iliac glands, however, are not always accessible for radium implantation from below. Greater knowledge of the outlying tumor bearing regions may not, therefore, contribute to an improvement in clinical results. The risk of laparotomy is not small, particularly in conjunction with radium treatment. The authors have pointed out that Pitts and Waterman used the intra-abdominal method at one time but abandoned it later. Taussig has reported on the use of gold seed inserted into the iliac regions, but that procedure was eliminated because of sequelae. It will be interesting to follow the work of Dr. Teahan and his colleagues and learn whether they overcome difficulties noted by other authors. Of significance in this report is the attempt to remove iliac nodes at the time of laparotomy. Taussig has reported considerable improvement in clinical results for such a method, but the time factors involved in the sequence of procedures are quite different. Dr. Teahan has employed a four week rest period between the completion of x-rays and the application of radium at laparotomy. Taussig attempts to use a shorter interval and applies radium ten to fourteen days after iliac lymphadenectomy. I have believed that several advantages were to be gained by shortening the interval between x-rays and radium. Dr. Teahan and his collaborators have employed low intensity radium treatment. In some instance radium has been employed for periods of two hundred and sixty hours. In those instances, total doses were on the order of ten thousand milligram hours. Pitts and Waterman employed comparable amounts at one time, but I believe that they have now reduced their total doses. It would be interesting to know whether Dr. Teahan and his co-workers have noted any sequelae attributable to the radium treatment. The authors' method of treatment is not one to be advocated for general use but one which should be continued in their institution or in others equipped for investigative clinical work.

DR. JOHN J. GILBRIDE, Philadelphia: I am going to speak on a subject that precedes the application of radium. The uterus is one of the most accessible organs in the body for examination. All forms of trauma are to be avoided. Careful inspection of the cervix is the first procedure. A biopsy is to be performed on any eroded or indurated area of the cervix of women above the age of 20 years, because we know that a small percentage of cases of cancer of the cervix occur in the third decade of women, and cancer of the cervix may occur in women under the age of 20 years. Early cancer of the cervix can be diagnosed only by the use of the microscope. The size, shape and mobility of the uterus can be determined usually by gentle palpation. The walls of the uterine cavity can be examined by the use of a cystoscope, and, if necessary, a biopsy may be performed. The uterine curet does not have any place in the diagnosis or treatment of cancer of the uterus.

DR. MISCH CASPER, Louisville, Ky.: I wish to confirm some of the points made by the authors. Opening the abdomen is not the harsh thing it is thought to be. One can attack even metastases, and I don't think that these cases should be given up if metastases are present. I have a case in which we used radium needles in metastasis to the ilium bone, with seven years' cure. The patient is still alive. We put the needles in from the abdominal side. Furthermore, the lymph nodes can be attacked. There is another advantage in opening the abdomen. With the hormone relation to cancer lately established, I think that removing the ovaries probably has some deterrent effect on recurrence, or certainly on the growth of cancer. In most cases one cannot determine with bimanual examination just what is inside the abdomen. Everybody who has opened many abdomens knows that one gets a much clearer view of the pathologic condition after the abdomen is opened. My experience differs from that of the authors in regard to treatment. They use radium for eleven days. I prefer to use it at intervals, two days at most at one application, and then repeat in several weeks the same amount, a larger amount or a smaller amount, according to the indications. This may be done even the third or fourth time. I wish also to confirm the use of the x-rays in these cases, correlating the roentgens or radiation delivered by the two.

DR. ROSCOE W. TEAHAN, Philadelphia: We feel that there is definite gain from opening the abdomen. We are much impressed with our inability to determine the extent of the disease by bimanual examination alone in many cases. We have been surprised at the intra-abdominal findings with the abdomen opened as compared with what we had thought was present before. This is a low intensity, high infiltration technic, and I think that the objections that have been recognized concerning the use of radon, which is very lightly filtered, are overcome first from the standpoint of filtration and second from the standpoint of the needles being sufficiently long so that we feel we know more definitely where they are. I think that Dr. Arneson's question regarding the time lag is well taken. There is considerable question as to whether that much time should be allowed to elapse. In some of our cases we have been reluctant to open the abdomen sooner because of the condition of the skin. We have had no operative mortality in this group. This may be due to the fact that we do not have intra-abdominal infection because the roentgen treatment has cleaned up the infection of the cervix before the abdomen is opened. Regarding sequelae, we have not had an adequate number of patients for a sufficient length of time to tell about that. We have recognized no fibrosis of the uterus so far. In our follow-up we are constantly on the lookout not only in these but in all our cervix patients for ureteral obstruction and infection of the cervical canal with a pyometra. There has been much argument regarding biopsy with its incident trauma. It seems to me that an accurate diagnosis is so important that it outweighs all other objections, and I am very reluctant to treat a patient with cancer—accessible cancer—without having microscopic confirmation of the clinical diagnosis. Since the interval treatment requires another anesthesia and a reapplication of radium, I prefer to avoid it.

**The Shortage of Iron in Milk.**—Milk is the only thing designed by nature solely for use as food, yet it has some minor deficiencies. Most outstanding is the shortage of iron. The dietitians' recommendation is that you make up this deficiency by a daily supply of eggs, liver or spinach. But the content of iron in the different foods may vary considerably and cannot be relied upon for a definite amount. The chemist's natural reaction is that the proper way to supply the necessary daily dash of iron is in the form of a soluble iron compound, which would be very inexpensive. Very finely divided metallic iron, ferric chloride, ferric ammonium citrate, ferrous sulfate and ferric pyrophosphate have all been found efficacious in varying degrees. A daily spoonful of a very weak solution of one of these compounds added to milk just before drinking it is the most painless way known to make up the iron deficiency at practically zero cost, though the taste is not all it should be.—Furnas, C. C., and Furnas, S. M.: Man, Bread and Destiny, New York, Reynall & Hitchcock, 1937.

# THE PRESENCE OF RELATIVELY AVIRULENT TUBERCLE BACILLI

## IN PULMONARY TUBERCULOSIS IN MAN

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Prior to 1898, the time when human and bovine tubercle bacilli were first differentiated by accurate biologic means, most of our conceptions of human tuberculosis and its origin were confused because of the lack of decisive experimental evidence on which interpretation could be based. So students believed that the type of disease and its organic distribution were determined largely by vague, inherent, readily changeable properties of the bacilli. Some of these unknown features were termed "virulence" or "pathogenicity," about which very little or no exact information existed. "Virulence" and "tubercle" were synonymous to them, since the latitude of tubercle was not understood as it is regarded today; i. e. in the light of our modern advances in the knowledge of the reactions of specific immunity and its vital part in the interactions of the natural responses of tuberculosis.

Just twenty years later, however, in 1918,[1] it was possible to demonstrate by culture and by animal inoculation that all but two of eighty-two cultures directly isolated from the sputum of patients with active tuberculosis were sufficiently virulent to produce tuberculosis in guinea pigs within two months after the subcutaneous injection of 0.000001 mg. of a culture. Of the two negative cultures one was entirely negative, not even producing tuberculosis with 1 mg. amounts (except a local tubercle) and the other produced only slight tuberculosis with 0.001 mg. amounts. Of the eighty-two cultures, eighty were of the human variety and one was definitely bovine while the other one was intermediate in its reactions and could not be placed definitely. As far as could be observed at the time there seemed to be no relation between the severity of the disease in man and the virulence of the bacilli.

In an extensive study on the behavior of tubercle bacilli within the body in 1936[2] it was shown that avirulent tubercle bacilli in amounts exceeding 0.001 mg. in man and animals produce definite intracutaneous local lesions similar to those resulting from the injection of the same nonviable tubercle bacilli. Avirulent human or bovine (BCG) tubercle bacilli do not produce progressive lesions when injected intracutaneously in man and, when injected in amounts capable of causing tubercle without ulceration, lose their viability in these lesions within about six months. Likewise, even large cutaneous local ulcers produced by avirulent human or bovine tubercle bacilli completely heal with scar formation in approximately six months. The reactions to viable avirulent tubercle bacilli in man, when used in amounts revealing visible changes, show a sequence of changed reactions on repeated monthly injections similar to the changes noted in animals and occur coincidentally with the development of specific immunity.

Thus we became better acquainted with avirulent tubercle bacilli. Calmette first scrutinized and evaluated, as far as possible for the time, BCG, an avirulent tubercle bacillus. He later used BCG for vaccination but before demonstrating its practical stability convincingly.

Not until 1937[3] were universally avirulent tubercle bacilli defined accurately enough to differentiate them clearly from acid fast saprophytes on the one hand and virulent human and bovine tubercle bacilli of various grades of virulence (or pathogenicity) on the other. Three strains of avirulent tubercle bacilli (human and bovine) had been studied: two from human sources (Trudeau R 1 and Human, Corper) and one (BCG) from a reputed bovine source. They could be differentiated only by their history, since they were all glycerophilic, and defining biologic (animal pathogenic) differences were lacking. They still possess the ability of restricted growth temperature (approximately 37 C.), an apparently stable property in contrast to acid fast saprophytes which grow in a wide latitude of temperatures. An avirulent strain of tubercle bacilli (human or bovine) was defined as a strain of tubercle bacilli lacking the ability to multiply in a highly susceptible host (such as the guinea pig) when injected intravenously in a fine suspension in amounts approximating the threshold of tubercle formation (0.01 to 0.001 mg. produces a local tubercle) as is evident by the lack of gross tuberculosis or as the absence of metastatic gross tuberculosis following the subcutaneous or intracutaneous injection of relatively large amounts of a fine suspension of the bacilli (approximating 10 to as much as 500 mg.). When properly tested, the property of avirulence or virulence of human or bovine tubercle bacilli was found to be stable consistently within a reasonable time, of many months at least, on artificial mediums or in the animal body. Changes in virulence of human or bovine tubercle bacilli appear to be a gradual transition and usually occur slowly over many generations of progeny of a pure strain. No guaranteed means of a ready or permanent transition appears to be available as yet, fulfilling the foregoing requirements for virulence.

In 1933[4] observations were presented on the viability and virulence of old cultures of tubercle bacilli in furtherance of the report published in 1918 on the virulence of sputum strains. For this purpose forty-seven flasks were chosen containing human tubercle bacilli and nine containing bovine tubercle bacilli, planted in 1919 and 1920 and again studied after more than twelve years' residence in the incubator following their full growth in 1920. Among the human cultures representing seventeen different strains, twelve were recovered successfully by culture. Two of these were

From the Research Department, National Jewish Hospital.

This investigation was aided by a gift from Morton May in memory of Florence G. May.

Read before the Section on Pathology and Physiology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

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avirulent human tubercle bacilli; one of them was designated "Bernstein" and was isolated from a patient at the National Jewish Hospital at the time (1919). Since the definition of virulence of tubercle bacilli was still vague to us in 1933, we preferred to call this organism "relatively avirulent" or "low virulent" even though we obtained negative results following the subcutaneous inoculation of 0.01 mg. in guinea pigs. It was noted at that time that

it would appear . . . that virulence is a property inherent and unchangeable in individual bacilli, but prolonged cultivation on artificial media may cause a perceptible, though not striking, change in the progeny of human tubercle bacilli under the ordinary conditions of laboratory perpetuation on culture media.

At that time it was also noted in correlating culture findings with in vivo conditions that

the persistence of the bacilli in the body is dependent upon a number of factors, but prominent among these, aside from the pathogenicity of the bacilli, is the factor of the number of bacilli introduced into the organs and tissues of an animal. This is evident from the fact that while small numbers of virulent tubercle bacilli in fine suspension are removed from the organs and tissues of the rabbit and dog within about one year, large amounts of even avirulent human tubercle bacilli can persist in the tissues of the dog in viable form for over three and a quarter years without the presence of characteristic histologic evidences of tuberculosis in these tissues.

Fig. 1.—Chest plate of patient K., May 1, 1923.

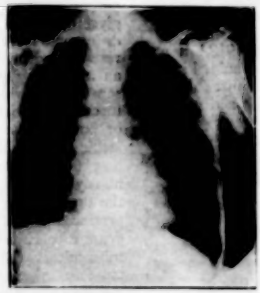

Fig. 2.—Chest plate of patient K., July 23, 1923.

Fig. 3.—Chest plate of patient K., April 9, 1925.

Although our prior studies were initiated in line with classic academic objectives, the present report originated with a case which presented a simple diagnostic problem. The patient, with evident tuberculosis, presented himself to an otolaryngologist for an examination of the ears. Because of the possible implications of tuberculosis the specimen obtained was referred to us for bacteriologic examination.

*History.*—A man aged 35 visited an otolaryngologist (Dr. Herman Laff) on Nov. 25, 1940 with the complaint of stuffiness of the right ear and difficult hearing, which had started two weeks before following a shower bath. The history given Dr. Laff at the time included pulmonary tuberculosis, an attack of iritis five years previously which improved after the extraction of a tooth, followed by a second attack four years later which also improved. Examination of the right ear showed generalized redness of the tympanic membrane with a dull appearance and absence of light reflex. The whispered voice was 15 feet for the right ear and 20 feet for the left. The condition was first diagnosed as ordinary catarrhal otitis media; treatment produced no improvement and hearing became worse. An audiogram on November 28 showed a 24 per cent loss of hearing in the right ear. Hearing diminished until Jan. 20, 1941, when 41 per cent loss was noted. Sulfathiazole produced no improvement. Myringotomy in December 1940 had produced only scant drainage, and discharge was of gluelike consistency.

Because of this and of the unfavorable progress as well as the history of previous active pulmonary tuberculosis, bacteriologic study was recommended with the following results: January 28 a specimen from the right ear collected by Dr. Laff yielded a positive tubercle bacillus culture at 37 C. within five weeks on glycerin egg yolk medium, having given a negative reaction for acid fast bacilli on microscopic smear examination. A guinea pig inoculated at the same time and killed after two and a half months showed only slight local adenopathy and no other signs of tuberculosis. A virulence study was then made with the pure culture, and generalized tuberculosis did not develop in the guinea pigs following the subcutaneous or intravenous injection of amounts as large as 1 mg. Intravenous rabbit inoculations with amounts as large as 1 mg. also resulted in negative findings for tuberculosis and thus excluded the possibility of a pathogenic avian tubercle bacillus or irregular bovine strain.

The patient was born in White Russia on Aug. 23, 1905. His father lived to the age of 82 and his mother died at the age of 45. Five sisters and brothers are all alive and well. He came to New York in 1921 and was ill in 1922. At that time he had a hemoptysis and entered Mount Sinai Hospital, where he remained for a number of weeks, a right artificial pneumothorax being performed, before coming to the National Jewish Hospital in Denver. After one and a half years' residence and discontinuance of pneumothorax he left the hospital in January 1924. The anatomic diagnosis during this time was pulmonary tuberculosis Turban III B; a guinea pig inoculated with smear negative pleuritic fluid on July 21, 1923 had positive generalized tuberculosis when killed three months later. The roentgenograms taken at intervals proved interesting. In May 1923 there were good collapse of the right lung, exudative lesions throughout the entire lung, evidences of cavity in the apex and several long adhesions of the upper lobe to the chest wall. Although also involved, the left lung was in fairly good condition (fig. 1). By July 1923 a pronounced collapse of the right lung had been attained, and the left lung appeared to be clearing (fig. 2). By April 1925, after the right lung had been permitted to reexpand, the adhesions were not as evident in the roentgenogram; the right lung showed evidences of improvement while the left still was definitely mottled (fig. 3). A final roentgenogram, taken in May 1941 (fig. 4), showed the right lung mottled with calcified lesions and still not completely expanded, multiple adhesions were still evident and definite excavations in the upper lobe could be seen. The left lung also showed scattered calcified lesions and some apical excavations. After cultures from the ear proved positive, specimens of pulmonary sputum were obtained, uncontaminated as far as possible by mouth and throat, and 3 successive specimens proved positive for acid fast bacilli

on microscopic smear examination and positive for tubercle bacilli on egg yolk culture. All three pure cultures (from 2 specimens of sputums obtained in April and the third in July 1941) were tested for virulence in guinea pigs and rabbits. None of these proved pathogenic for the guinea pigs or rabbits when given intravenously in amounts as high as 1 mg. in fine suspension. The conclusion drawn from these virulence tests was that we were dealing in this case with an avirulent strain of tubercle bacilli.

*Postmortem Examination.*—In April 1942 the patient died following a brief acute illness. Dr. Eli Nelson, who attended him at his last illness, said that he complained of indefinite pleuritic pain and general fatigue; Dr. Nelson sent him to the hospital for a check-up and rest five days before death. There was no pyrexia; although his general condition had not been good for some time, no definite findings except those pertinent to his old pulmonary tuberculosis could be noted. Twelve hours before death he became progressively weaker and showed a definite collapse-like reaction, which was then attributed to a cardiac effect in the absence of other manifestations. A postmortem examination performed by Dr. Irving Geever established the anatomic diagnosis of fibrocavernous tuberculosis in both lungs with chronic (compression) atelectasis of the right lung, extensive pleural adhesions to the upper lobe and cavitation of the upper portion of both lobes in the left lung. There were multiple small calcareous foci throughout both lungs.

*Clinical History.*—Bernstein, of Russian nativity (born in 1889), entered the National Jewish Hospital in 1914 with a notation that his disease was contracted in May, starting with a prolonged cold, loss of weight, slight pyrexia and mucopurulent sputum containing tubercle bacilli (in ear). The physical changes (rales, vocal fremitus, resonance and rough and diminished breath sounds) at that time were confined to the left apex and the right infraclavicular region. He was discharged with his condition pronounced arrested in 1915. The first roentgenogram of the chest was taken Feb. 5, 1920 (fig. 5) and showed slight mottling throughout both lungs with pronounced linear markings and a questionable small cavity in the left apex. The condition was apparently arrested at this time and the patient was performing the duties of a full time occupation. In 1941 he was still employed full time and was well. On Jan. 22, 1942 a roentgenogram of the chest (fig. 6) revealed a number of discrete small round foci in both lungs generally distributed throughout the parenchyma. The hilar shadows were pronounced and lung markings were accentuated to the right base. No cavity could be defined definitely. In the hope of recovering enough c his sputum for a culture, we took every precaution to obtain a pulmonary specimen uncontaminated by mouth and throat materials. After two unsuccessful attempts, a third specimen of sputum was obtained which was negative for acid-fast bacilli on microscopic smear examination; but a plant gave a positive culture after

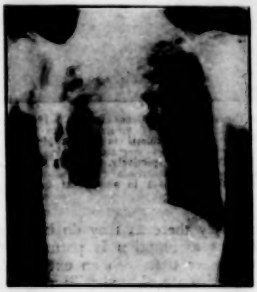

Fig. 4.—Chest plate of patient K., May 19, 1941.

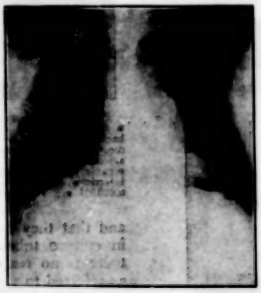

Fig. 5.—Chest plate of Bernstein, Feb. 5, 1920.

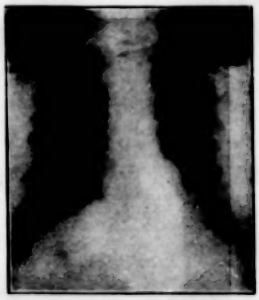

Fig. 6.—Chest plate of Bernstein, Jan. 22, 1942.

The heart showed no abnormalities beyond a slight right hypertrophy, and the kidneys appeared normal, as did the adrenals. The significant pathologic changes were confined to the lungs which, aside from chronic fibrotic and calcareous changes, resultant compression atelectasis and atrophy of the right and compensatory hypertrophy of the left lung, showed a pronounced marginal acute hyperemia in the left lung not, however, attaining a pneumonic stage (fig. 6). Possibly the latter was the early result of a bacillary allergic reaction.

In view of the interesting findings regarding the presence of avirulent tubercle bacilli in this case and the earlier observations on virulence which had been carried on by us since 1918, we referred back to our data on the patient from whose sputum Bernstein tubercle bacillus was originally obtained and who was still available to us for further study. Briefly, the tubercle bacillus isolated in 1919 from the sputum of Bernstein was relatively avirulent in that the original sputum and the organism isolated from it in 1919 was sufficiently avirulent that no infection occurred in guinea pigs after the subcutaneous injection of 0.01 mg. This was verified in that the original strain, reisolated in 1933 from a culture made in 1920, was completely avirulent to guinea pigs tested in 1933 and 1942. As much as 1 mg. was given subcutaneously or intravenously without causing infection.

about six weeks with the following results of infection tests: Intravenously 1 mg. killed the guinea pigs on an average of fifty days with a diffuse generalized miliary tuberculosis. Subcutaneously 1 mg. at three months produced a well defined local focus and tributary glands, multiple punctate lesions in the spleen, with no involvement of the other internal organs; 0.001 mg. produced at three months a slight involvement of the local and tributary glands, and an occasional animal would present a few splenic tubercles; smaller amounts than this did not produce tuberculosis. In comparison, a virulent strain of human tubercle bacilli given intravenously to guinea pigs would produce acute death in about sixteen days, while 0.000001 mg. subcutaneously would produce a massive generalized infection of all the internal organs of the guinea pig within three months (fig. 8).

Therefore, it is concluded that Bernstein's sputum in 1920 contained relatively avirulent tubercle bacilli incapable of infecting guinea pigs or rabbits under ordinary conditions, while the strain isolated in 1941 showed relatively mild virulence for guinea pigs but none for rabbits.

From these observations it appears likely that virulent tubercle bacilli from the patient with the usual active case of pulmonary tuberculosis might attain relative avirulence in their progeny, such slow transition resulting from continued growth in the prolonged

chronic case. The question was presented also whether tuberculosis in the chronic prolonged case may not be predominantly one of chronic allergic intoxication rather than predominantly tuberculosis. Our recent studies have contributed to the significance of this question by separating tuberculosis into the disease per se and tuberculous allergy, a separate condition.

Eight patients with advanced tuberculosis (sanatorium residents) with positive sputum, whose histories disclosed ten years' or more duration of their disease, were chosen to further this study. These patients were selected by Dr. Charles J. Kaufman from a hospital patient list of over 200. Culture isolations of the tubercle bacilli in the sputum were made on inspissated glycerin egg yolk medium, and quantitative virulence tests were performed on guinea pigs with the primary cultures. Each culture was submitted to an accurate quantitative evaluation of virulence, the details of which will be reported more fully elsewhere. The essential results, however, in the 8 cases are given in the accompanying table. In order to evaluate the brief virulence report which is given as the lethal result time following intravenous (ear vein) injections of fine uniform suspensions, 1 mg. being used as the standard amount of bacilli, the control figures for each of three grades of bacilli are also tabulated and marked "control" under the strain designation.

Fig. 7.—Appearance of lungs of patient K.: *A*, anterior view of lungs as they lay in the chest wall, showing the contracted atelectatic right lung at the left, the hypertrophied upper lobe of the left lung in the center and the lower lobe of the left lung at the right; *B*, section of right atrophied lung; *C*, section of left lung showing small cavities in upper parts of both upper and lower lobes, compensatory hypertrophy and a decided hyperemic reaction in the parenchyma of the lower lobe at the right.

It is unfortunate that data are not available at present beyond those presented in this study which would indicate a transition in virulence in the strain of bacilli carried by a patient with pulmonary tuberculosis over many years. However, it must be accepted that there is a possibility that tubercle bacilli can lead a vegetative existence in the cavities or certain parts of the chest

Fig. 8.—A comparison of the virulence of Bernstein strain 1941 with a recently isolated sputum strain (H 841) of virulent human tubercle bacilli. *A* (left to right), organic tuberculosis in guinea pigs three months after the subcutaneous injection of Bernstein strain 1941 in amounts of 0.1, 0.001 and 0.000001 mg. respectively. *B* (left to right), organic tuberculosis in guinea pigs three months after the subcutaneous injections of virulent sputum strain (H 841) in amount of 0.001 and 0.000001 mg. respectively.

and that they may multiply there as they do in vitro in culture tubes. If this assumption is permissible, there is no reason to believe that such an extravital, as referred to the body, existence of the bacilli may not result in a slow and gradual transition of virulence such as occurs in the culture tube under artificial cultivation. Even under these conditions, however, there can be no absolute guaranty that human or bovine tubercle bacilli will regularly become avirulent.[4]

With recognition of this, it is interesting to note again that the majority of human tubercle bacilli isolated from patients with acute active pulmonary tuberculosis are highly virulent. Thus, it is interesting to note also that the series of cultures isolated from the 8 patients with chronic pulmonary tuberculosis of over ten years' duration showed 50 per cent of the cases graded as moderately virulent human tubercle bacilli while the other 50 per cent proved highly virulent. Although we realize that this series is not large, the problem of the transition over years in the same patient is of great importance, and it is with the hope of initiating such investigations that this report was undertaken. There is another deduction to be drawn from this entire study, however, and that is that the presence of tubercle bacilli (not acid-fast saprophytes) in the sputum of a patient with advanced pulmonary tuberculosis presents no evidence that such tubercle bacilli are virulent. With regard to patient K, whose sputum contained large numbers, the tubercle bacilli proved incapable of infecting animals (universally avirulent), while the tubercle bacilli of Bernstein were relatively avirulent.

## SUMMARY AND CONCLUSIONS

1. In 1918 it was shown that the majority of patients with open active clinical pulmonary tuberculosis who are residents in a tuberculosis sanatorium harbor virulent tubercle bacilli in their sputum.

2. Since then it has been possible to define avirulence and virulence of tubercle bacilli more accurately and to follow the course of several patients harboring relatively low virulent bacilli over several decades. In 1 instance, the strain of mammalian tubercle bacilli was carried for over twenty years, and the bacilli were again isolated from the patient twenty-one years after the first isolation and study. This strain, though originally relatively avirulent, has developed a low grade of virulence in the patient. In the second case, in which the tubercle bacilli were virulent enough in the pleural fluid eighteen years ago to infect animals, on recent isolation from the sputum and ear they proved avirulent. The extravital existence of the bacilli in the excavated lung of the patient appears to parallel similar laboratory cultivation in that some artificially cultivated bacilli tend to become less virulent, or in special cases become avirulent. This patient, however, became acutely ill with the infection caused by the avirulent tubercle bacilli and died apparently not from tuberculosis but from tuberculous allergic bacillary intoxication caused by the large amounts of avirulent tubercle bacilli harbored in the lungs.

3. In an effort to establish whether chronic open cases of pulmonary tuberculosis of long duration harbor attenuated tubercle bacilli in any number, 8 selected patients with open pulmonary tuberculosis were chosen. Cultures of the tubercle bacilli isolated from their sputums were submitted to graded comparative virulence tests. Half of the strains from this series proved highly virulent and the other half were only moderately virulent. The series, however, is too small to draw general conclusions beyond the fact that the presence of tubercle bacilli in the sputum does not warrant deductions regarding their virulence without actual submission of the bacilli to graded virulence tests. It suggests the possibility of a gradual diminution of virulence of a case over a period of years. Further studies appear desirable.

*Results of Accurate Quantitative Evaluation of Virulence*

| Grade of Virulence | Survival in Days* After Intravenous Injection of 1 Mg. of Bacilli | Strain or Case Designation |
|---|---|---|
| Highly virulent | 16 | H 109 (control) |
| | 16.5 | J. V. |
| | 18 | N. G. |
| | 18.5 | K. B. |
| | 19 | R. S. |
| Moderately virulent | 20 | H 37 (control) |
| | 25 | E. F. |
| | 25 | J. K. |
| | 26.5 | K. J. |
| | 30 | M. W. |
| Relatively low virulent | 50 | Glurkson (control) |

* The recorded result is the average finding with at least 2 guinea pigs used for this phase of the test.

4. From these studies, the prognostic significance of the presence of tubercle bacilli in the sputum must be guided by three factors at all times: specific immunity to tuberculosis, which cannot be gaged at present in the individual case; the number of bacilli in the lungs, which may be approximated, and the virulence of the bacilli, which can be tested.

# IS THE ASTHMATIC PATIENT A GOOD SURGICAL RISK?

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As it is often necessary to subject patients with asthma to major surgical procedures, it is of interest and importance to know the incidence of postoperative pulmonary complications and the apparent mortality risk in such a group. Therefore a study was made reviewing 189 consecutive cases of allergic asthma and asthmatic bronchitis in which major operations were performed at the Mayo Clinic between July 1934 and September 1940. The series consisted of 101 cases of predominantly allergic asthma and 88 of asthmatic bronchitis. The major surgical procedures carried out in our cases of asthma varied greatly.

In considering postoperative complications, only pulmonary complications were included in this study. In 25 (13.2 per cent) of the 189 cases some form of pulmonary complication (including severe asthma) developed after operation, as shown in the table. There were 10 cases of postoperative pneumonia (5.3 per cent), 9 of severe asthma (4.8 per cent), 3 of bronchitis (1.6 per cent), 2 of atelectasis (1.1 per cent) and 1 case of pulmonary infarction (0.5 per cent). Of the 10 cases in which pneumonia developed, a preoperative diagnosis of allergic asthma had been made in 4 and a diagnosis of asthmatic bronchitis in 6. In 8 of the 9 cases in which severe bouts of asthma occurred postoperatively, a diagnosis of allergic asthma had been made and in 1 a diagnosis of asthmatic bronchitis. Bronchitis occurred postoperatively in 2 cases of allergic asthma and in a case of asthmatic bronchitis. Pulmonary infarction occurred in 1 case of asthmatic bronchitis. One case of atelectasis occurred in each classification. Generally speaking, the occurrence of pulmonary complications after operation on patients who had allergic asthma and those who had asthmatic bronchitis was about equal.

For the general population, the incidence of pulmonary complications after operations in the upper part of the abdomen is approximately double the incidence after operations on the lower part of the abdomen. This has been attributed to the reduction in vital capacity, which is greater after procedures on the upper than on the lower part of the abdomen. This difference was even more apparent when comparison was made of the incidence of pulmonary complications in our cases of asthma after surgical procedures on the upper or lower parts of the abdomen. When postoperative asthma was excluded as a complication, pulmonary complications developed in 15.1 per cent of the cases of asthma in which operations were performed on the upper part of the abdomen, whereas the incidence was 5.4 per cent of those in which operations were lower in the abdomen. When postoperative bouts of severe asthma are included, the incidence increased to 24.5 per cent in the upper abdominal cases as against only 7.1 per cent in the lower abdominal cases. It would appear significant, therefore, even in this small

From the Division of Medicine, Mayo Clinic.
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series of patients having asthma, that the incidence of postoperative pulmonary complications is much increased after operations on the upper part of the abdomen. It also will be noted that asthma developed as a postoperative complication in more cases after operations in the upper abdominal region.

It should be emphasized at this point that 164 patients having asthma (86.7 per cent) underwent major operations without development of any significant pulmonary complication. It is unfortunate that the incidence of postoperative pulmonary complications in an otherwise identical nonasthmatic group of patients is not available for comparison, but it is felt from the data available that well considered necessary surgical procedures may be carried out on asthmatic patients who are otherwise in good condition, without great or prohibitive risk.

As an illustration, the repair of a diaphragmatic hernia in a case of asthma was accomplished without pulmonary complications. The same patient successfully underwent resection of the ascending colon for carcinoma two years later, again without pulmonary complications. Since this series was completed, another allergic patient having hay fever and asthma submitted to repair of a diaphragmatic hernia. This patient was hospitalized preoperatively in a pollen free room near the termination of her hay fever season. She was found sensitive also to orris root contained in her dusting powder and to feather dust. Preliminary to repair of the hernia, each patient was subjected to temporary interruption of the left phrenic nerve, which resulted in elevation and fixation of the left half of the diaphragm. In spite of this handicap to normal respiration and the subsequent huge operation necessary to repair the diaphragmatic hernias, both patients got along remarkably well. The second patient had a little asthma postoperatively, and this was readily controlled by ephedrine and epinephrine.

*Pulmonary Complications After Major Operations in 189 Cases of Asthma*

| Site of Operation or Condition Present | Cases | Postoperative Pulmonary Complications | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Pneumonia | Severe Asthma | Bronchitis | Atelectasis | Pulmonary Infarction | Total Cases | Deaths |
| Gallbladder | 44 | 4 | 4 | 1 | 2 | .. | 11 | 1 |
| Stomach and duodenum | 9 | 1 | 1 | .. | .. | .. | 2 | .. |
| Pelvis | 33 | 1 | .. | .. | .. | .. | 1 | .. |
| Hernia (inguinal) | 15 | .. | .. | 1 | .. | .. | 1 | .. |
| Appendix | 7 | 1 | .. | .. | .. | .. | 1 | .. |
| Colon | 4 | .. | 1 | .. | .. | .. | 1 | .. |
| Thyroid | 21 | 1 | .. | .. | .. | .. | 1 | .. |
| Breast | 10 | .. | .. | .. | .. | 1 | 1 | .. |
| Prostate | 26 | .. | 1 | 1 | .. | .. | 2 | 1 |
| Kidney | 5 | 2 | .. | .. | .. | .. | 2 | .. |
| Central nervous system | 9 | .. | .. | .. | .. | .. | .. | .. |
| Miscellaneous* | 8 | .. | 2 | .. | .. | .. | 2 | 2 |
| Total | 189 | 10 | 9 | 3 | 2 | 1 | 25 | 4 |
| Percentage of total | | 5.3 | 4.8 | 1.6 | 1.1 | 0.5 | 13.2 | 2.1 |

* Operation for esophageal diverticulum, diaphragmatic hernia, intractable asthma and emphysema, abdominal carcinomatosis, cryptorchism, hypospadias and infected hydrocele.

In the entire group of 189 patients having asthma and undergoing surgical procedures, only four deaths occurred, a mortality rate of 2.1 per cent. One patient developed severe asthma immediately after transurethral prostatectomy for benign prostatic hypertrophy with retention and died suddenly. He was 70 years of age and had had rather severe asthma at intervals for forty years. Another complicating factor in this case was hypertensive heart disease and auricular fibrillation, although there was no evidence of congestive failure. The evening prior to operation it was necessary to administer codeine and epinephrine hypodermically to control his asthma. Just before operation the patient was given ⅙ grain (0.01 Gm.) of morphine sulfate and 1½ grains (0.1 Gm.) of soluble pentobarbital. For the anesthetic agent 65 cc. of a 1 per cent solution of metycaine was used in a sacral block. During the course of the operation the systolic blood pressure decreased from 120 mm. of mercury to 80 mm. This decrease was combated by administering 25 mg. of ephedrine sulfate intravenously. At the completion of the operation a severe choking spasm developed and respiration stopped before the heart stopped beating. Epinephrine, nikethamide, and artificial respiration were ineffectual. The role of drug allergy in this case is not clear but must be considered as a possible cause of death.

A second patient died three days following resection of the posterior pulmonary plexus after the method described by Rienhoff and Gay.[1] The operation was performed in an attempt to relieve intractable, severe and continuous asthma of many years' duration. Severe emphysema had developed secondarily. In the present state of our knowledge of the treatment of severe asthma, this patient had nothing further to look for except distressing invalidism from his asthma. He had tried unsuccessfully the gamut of asthma remedies. Operation was undertaken reluctantly because the extreme risk was recognized by the consulting physicians and surgeons as well as the patient, who was willing and anxious to accept the risk on the slight possibility of obtaining some degree of relief. After operation severe shock developed, from which the patient recovered slowly. On the second and third postoperative days during episodes of coughing a right femoral hernia developed; this was reduced each time. The patient died the third day after operation. The chief pulmonary observations at necropsy were bronchitis, bilateral bronchiectasis and emphysema.

A third patient died five days following operation from a suppurative mediastinitis after the removal of an esophageal diverticulum. This patient experienced some asthma after operation, but asthma itself did not contribute to the patient's death as far as could be observed.

A fourth patient, a man aged 58, died of pneumonia seven days after cholecystectomy and exploratory choledochostomy were performed for chronic ulcerative cholecystitis and cholelithiasis complicated by hepatitis and pancreatitis. He had had long-standing asthmatic bronchitis, and for this reason operation was delayed for two weeks until his cough and asthma could be better controlled. When maximal improvement seemed to have been attained he was operated on with spinal anesthesia, but in spite of oxygen therapy the splinting of the lower portion of the thorax proved fatal because of the development of bronchopneumonia. A more favorable outcome might have resulted if the sulfonamide drugs had been available at that time to combat respiratory infections.

The asthmatic patients in this series received special preoperative and postoperative consideration in an

1. Reinhoff, W. F., Jr., and Gay, L. N.: Treatment of Intractable Bronchial Asthma by Bilateral Resection of Posterior Pulmonary Plexus, Arch. Surg. **37**: 456-469 (Sept.) 1938.

attempt to minimize postoperative pulmonary complications. All patients who had had recent colds were denied operation until they had completely recovered from the infection. Before being subjected to operation, patients with acute severe asthma were hospitalized preoperatively until the asthma was under better control. Most patients with asthmatic bronchitis received iodides routinely for several days before operation, and in certain instances iodides were administered postoperatively by rectum. In an occasional instance, chronic nondraining paranasal sinus infection was treated and adequate drainage established before proceeding with the major surgical operation. Allergic surveys in many cases furnished information useful in the preoperative and postoperative care of these patients. The patients were particularly questioned about idiosyncrasies to various drugs, anesthetics and serums, and the professional and nursing staffs were cautioned not to administer drugs to which the patient had a known or suspected sensitivity. Other allergic precautions included placing patients who were sensitive to pollen in a room furnished with a pollen filter in the window, when operation was undertaken during their hay fever season, and the use of dustproof covers on pillows and mattresses or the use of air mattresses when indicated. The change to hypoallergic dusting powders, soaps and cosmetics was indicated and carried out in a number of instances. It was occasionally necessary, for allergic reasons, to omit certain foods from the patient's diet, in which case an attempt was made to provide suitable substitutes and supplements.

The type of anesthetic agent to be used was given thought and ether anesthesia was avoided whenever possible. Ether, however, had been administered in 7 of the 25 cases in which pulmonary complications occurred. Patients were placed in an oxygen tent on returning from the operating room when their asthma seemed to warrant it. It is only by careful preoperative and postoperative care and proper selection of patients for operation and the all important, close cooperation between the medical and surgical consultants looking after these patients that a low morbidity and mortality rate can be attained in these cases when anesthesia and operative procedures are required. In emergency surgical treatment it is not always possible to prepare patients along ideal lines, but for all elective operations all possible precautions should be carried out carefully. A large majority of these patients received treatment before the sulfonamide drugs were available. Carefully administered, these drugs not only should increase the safety of necessary operation in the presence of asthmatic bronchitis but conceivably might make it possible to undertake surgical treatment in cases in which it might otherwise be contraindicated by asthmatic bronchitis.

## CONCLUSION

It seems that the risk of operation on patients who have asthma and asthmatic bronchitis and have received adequate preoperative and postoperative care is not great, as 86.7 per cent of our patients underwent major operations without developing significant pulmonary complications. Patients with asthma and asthmatic bronchitis who undergo operations on the upper parts of the abdomen, however, are more likely to have postoperative pulmonary complications, including exacerbations of severe asthma, than those who undergo operations on the lower part of the abdomen. Postoperative pneumonia, bronchitis and severe asthma were the more common complications encountered.

## ABSTRACT OF DISCUSSION

DR. LESLIE N. GAY, Baltimore: During the past twenty-two years many patients in my clinic at the Johns Hopkins Hospital have been relieved by surgery of diseased gallbladders, pelvic tumors, acutely or chronically inflamed appendixes, diseased and often obstructing thyroid glands, and chronic infections of the antrums. The authors specifically mention that "ether anesthesia was avoided whenever possible." I prefer ether because of its stimulating effect on the heart. Avertin with amylene hydrate and pentothal sodium cause respiratory depression and shallow breathing, both undesired in the asthmatic patient. Gay and Rienhoff published in the May issue of the *Bulletin of the Johns Hopkins Hospital* an article entitled "Further Observations on the Treatment of Intractable Bronchial Asthma by Bilateral Resection of the Pulmonary Plexus." Bilateral interruption is necessary to obtain what might be described as the expected physiologic result. The mechanism involved in severe asthmatic attacks is not only a constriction of the bronchi with the consequent increase in the resistance to inflow and outflow of air in the lungs. Constriction by spasm may play an insignificant role. There is also an excessive secretion from the bronchial glands of the patient with chronic asthma. The mucus becomes tenacious and inspissated, actually plugging both large and small bronchi, and not infrequently there is edematous swelling of the mucous membranes of the small bronchioles. These findings have been confirmed by a study of the autopsy material of 50 asthmatic patients who have died in the hospitals in Boston and of 25 who have died in the Johns Hopkins Hospital. The 21 patients operated on had suffered with violent attacks of asthma in periods varying from one to twenty-eight years. The duration of the disease had no apparent effect on the therapeutic success of the operative procedure. One patient, 39 years of age, had suffered with asthma for twenty years; since the operation eight years ago she has never had an attack of asthma. The ages of the patients seemed to have no relation to the outcome; the youngest was 25 and the oldest was 55. These patients suffered with asthma of intrinsic type, the result of chronic respiratory infection and the subsequent infection of the pulmonary system. Allergy from extrinsic factors apparently played little part in the production of the asthmatic paroxysms.

DR. GEZA DE TAKATS, Chicago: Bronchial spasm and increased bronchial secretion may occur even in nonasthmatic patients following or during operations. For several years, now, in the experimental laboratory my associates and I have been interested in vagal reflexes which may originate in the upper abdomen or in the chest. Thus, after a normal bronchial pattern is obtained in the dog, traction on the cystic duct, traction on the stomach, may produce a pattern characteristic of bronchospasm which can be readily abolished by atropine or bilateral vagal section. It has been found that if carefully looked for partial atelectasis occurs not infrequently after upper abdominal operations, as high as in two out of each thousand patients undergoing laparotomy. It is our feeling that anesthetics which have a vagal or a parasympathetic action, such as pentothal sodium and cyclopropane, facilitate these reflexes and that ether would be the best anesthetic. It interested me that the authors preferred not to use ether anesthesia. Experimentally, ether is the drug which most readily abolishes these reflexes.

DR. L. E. PRICKMAN, Rochester, Minn.: Both Dr. Gay and Dr. de Takats question the advisability of trying to avoid ether in operating on asthmatic patients. It has been my clinical impression that ether produces some bronchial irritation and aggravates coughing and thereby asthma, and that it should be avoided especially in cases in which asthma is secondary to bronchitis. Ether was administered to 7 of the 25 patients in our series who had postoperative pulmonary complications. It was a privilege to have Dr. Gay review his and Dr. Rienhoff's experience in the surgical treatment of severe asthma. Their results are encouraging, and the operation which Dr. Rienhoff has been doing should be kept in mind in attempting to help the patient with severe chronic asthma. The unfavorable result obtained from this operation in 1 case in our series certainly is not going to discourage me from considering it when I feel that the asthmatic patient is in serious condition and has exhausted all the usual methods of obtaining relief from asthma.

# SOME CLINICAL USES OF PAPAVERINE IN HEART DISEASE

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Papaverine is an opium alkaloid of the benzylisoquinoline group, of low toxicity and non-habit forming.[1] At the present time its widest clinical use is in the treatment of conditions associated with smooth muscle spasm, e. g. peripheral vascular embolism,[2] pulmonary embolism,[3] Raynaud's disease [4] and ureteral [5] or other types of tubular spasm.

We have recently investigated its action on the dog's heart and have found that it is a powerful and lasting coronary vasodilator,[6] that it diminishes considerably the ease with which ventricular fibrillation is induced by faradic or other type of stimulation [7] and that after its administration vigorous manual massage of the heart will restore orderly, synergic beating to the fibrillating ventricles.[8]

Further studies on the dog's heart [9] revealed that: 1. Papaverine in large doses depresses auriculoventricular and intraventricular conductivity leading to auriculoventricular and intraventricular block. 2. It decreases or eliminates ventricular premature beats induced at either a fixed part or different parts of the cardiac cycle. 3. It enhances the difficulty of producing or maintaining auricular fibrillation by means of a faradic current. 4. It prolongs the refractory period of the myocardium. 5. In toxic or nearly toxic doses it causes active ectopic ventricular rhythms, including premature systoles, paroxysmal tachycardia, flutter or fibrillation, or cardiac standstill or complete auriculoventricular block; its toxic action is more apt to occur in hearts that are ischemic. 6. All these effects are primarily direct ones on the heart. These results suggested that the beneficial action of papaverine in reversing artificially induced ventricular fibrillation and in diminishing or abrogating experimentally produced ventricular premature contractions is due to its depression of conductivity and irritability and to its prolongation of the refractory period of the ventricles.[9] We have suggested that this action of papaverine and its coronary dilating effect would make it useful clinically in coronary insufficiency and myocardial infarction.[9] It has recently been shown in experiments on dogs that the administration of papaverine reduces the mortality resulting from experimental ligation of a major coronary artery.[10] Likewise, our experimental demonstration that this agent reduces or effaces induced premature contractions [9] suggests the possibility of its clinical value in the treatment of premature beats.

In this communication results of clinical studies with papaverine are presented. We have investigated the clinical effects of this drug in man on the anginal syndrome and on premature systoles. In the latter condition, the effect of the drug was studied both when given intravenously and when given orally.

## EFFECT OF PAPAVERINE ON THE ANGINAL SYNDROME

The intravenous use of papaverine for the anginal syndrome was first suggested by Pal [11] in 1913, and in 1922 [12] he reported beneficial results in 2 cases following the administration of 1.3 grains (0.075 Gm.) intravenously; severe attacks were relieved in both, but the effect was lasting only in 1 of them. Meyer and Gottlieb [13] referred to the intravenous use of this drug as a coronary vasodilator in angina pectoris but cited no cases. Macht [14] in 1916 gave 0.6 grain (0.03 Gm.) papaverine sulfate by vein to 5 cardiac patients and noted temporary alleviation of the pain. Dopffel and Kutschera-Aichbergen [15] have administered large but safe doses (2 to 5 grains [0.13 to 0.3 Gm.] at a single dose and up to 30 grains [2 Gm.] daily) of eupaverine, which is as potent as papaverine, to several patients with severe angina pectoris and found a definite decrease in the anginal pain. Boehm [16] found that a combination of cadechol, a camphor derivative (2 grains), and papaverine (½ grain) orally often caused the anginal attacks to disappear entirely. Kohn [17] used papaverine in doses of 0.6 grain three times a day by mouth in patients with angina who failed to respond to drugs of the caffeine group. Evans and Hoyle [18] have published a careful study of 90 patients with angina treated for two years with a wide variety of drugs; papaverine given orally (0.4 grain [0.026 Gm.] three times a day) was one of four drugs which had slight value. In our experience this dosage, like the dosage employed by most of the other authors, is too small.

The difficulties in evaluating the efficacy of any drug in the oral treatment of the anginal syndrome have recently been emphasized.[19] Sources of error reside in the method used in evaluation, in the subjective reactions of the patient, in the unwitting prejudice of the examiner and in the spontaneous remissions of the disease. We have attempted to avoid these pitfalls as far as possible.

*Method.*—Our procedure of evaluating the drug action was similar to that employed by Evans and Hoyle.[18] Well established cases of the anginal syndrome, previously treated in the cardiac or medical clinics for from six months to several years, were selected. A complete history (including social and family background) and a physical examination were made and requisite laboratory data were available in

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Physicians of the Michael Reese Hospital and other local hospitals referred suitable patients for this study.

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the charts of all the patients, this information having been obtained during their previous attendance at the clinic and supplemented by us.

A control period of two to four weeks without any medication (except glyceryl trinitrate [20]) or with the placebo (tablets of ordinary lactose) was established, particular emphasis being placed on the following cardinal features: (1) the number of anginal attacks daily, (2) the duration of each attack, (3) the severity of each attack, (4) the degree of activity indulged in during an attack, (5) the average number of blocks that the patient could walk in a day before precordial pain occurred and (6) the number of tablets of glyceryl trinitrate used a day or week to alleviate severe pain. For this purpose, the patient kept a daily diary, which was submitted at each clinic visit. This was carefully reviewed with the patient, who was also interrogated in regard to his degree of well-being, to his reaction to the medication, to the weather conditions and to any change in his habitual status, e. g. daily activities and emotional upsets. Usually a single examiner interviewed the patient, but occasionally another observer was substituted as a check.

The diary not only adds objectivity to this method of study but also places a great share of the clinical analysis on the patient, thereby encouraging faithful and accurate reports. Thus if a patient did not recall his reactions to either medication or his diary entries during the previous interval, these data were read to him, stressing in this way the importance of an accurate diary. The control period also furnished information about the reliability and the degree of cooperation of the patient.

After this control period the unreliable and uncooperative patients were eliminated. The others were started on 1½ grain (0.1 Gm.) tablets of papaverine hydrochloride.[21] This was given four times a day—before meals and before bedtime. This strength is greater than that recommended conventionally,[1] but our experience fully justifies this. Usually two weeks of placebo medication were alternated with a similar period of papaverine medication; rarely one or three week intervals were employed. Occasionally acetylsalicylic acid or codeine was given instead of the placebo of lactose. The papaverine tablets are about three times as large as the placebo tablets, but the patient was assured that a small pill may be as potent as a large one by virtue of concentration. This assurance overcomes in part any bias that might arise in the patient's mind because of a difference in size of the two pills. The careful diary and regular interrogations were continued throughout the study.

The cardinal features mentioned were summarized for each course of treatment, and a daily graph was made so that a pictorial impression might also be obtained. In this way the effects of placebo and papaverine were compared for one or more periods of trial by subjecting the patient to them in succession. Sometimes a clear effect could be demonstrated by a reduction in the frequency of anginal attacks alone, or by an increase in the number of blocks walked (if angina pectoris occurred only after walking); at other times all these features had to be combined in order to obtain the net effect. It is obvious that the regularity and attention associated with this type of study may in itself alter the clinical manifestations independent of the form of drug therapy. It is for this reason that periods of papaverine were alternated with periods of placebo. In some cases this attention and diary keeping led to progressive improvement, but even here the special benefit of papaverine was revealed (cases 1 and 2).

*Effect of Papaverine Hydrochloride (One and One-Half Grains Four Times a Day) on the Anginal Syndrome*

| Patient | Age, Years | Diagnosis | Duration of Anginal Syndrome, Years | Duration of Treatment, Months | Courses on | | Result |
|---|---|---|---|---|---|---|---|
| | | | | | Placebo | Papaverine | |
| W. F. | 51 | Arteriosclerotic heart disease | 2 | 6 | 6 | 2 | Inconclusive |
| J. S. | 62 | Arteriosclerotic heart disease | 15 | 8 | 8 | 6 | Definitely improved |
| I. S. | 70 | Arteriosclerotic heart disease; status anginosus | 8 | 7 | 5 | 4 | Definitely improved |
| S. H. | 59 | Hypertensive and arteriosclerotic heart disease | 2 | 8 | 10 | 7 | Definitely improved |
| J. S. | 52 | Arteriosclerotic heart disease; diabetes mellitus | 3 | 8 | 9 | 8 | Definitely improved |
| F. W. | 65 | Arteriosclerotic heart disease | 1 | 11 | 12 | 8 | Definitely improved |
| R. B. | 65 | Arteriosclerotic heart disease | 4 | 6 | 5 | 2 | Inconclusive |
| H. G. | 64 | Arteriosclerotic heart disease | ½ | 8 | 8 | 6 | Definitely improved |
| M. P. | 59 | Hypertensive and arteriosclerotic heart disease | 3 | 5 | 6 | 4 | Slightly improved |
| A. K. | 65 | Hypertensive and arteriosclerotic heart disease | 1 | 7 | 5 | 5 | Definitely improved |
| C. C. | 63 | Arteriosclerotic heart disease; angina on effort; diabetes mellitus | 2 | 8 | 8 | 7 | Definitely improved |
| D. O. | 72 | Arteriosclerotic heart disease | 2 | 7 | 8 | 6 | Definitely improved |
| S. W. | 50 | Arteriosclerotic heart disease | 3 | 7 | 6 | 5 | Slightly improved |
| I. B. | 68 | Arteriosclerotic heart disease | 5 | 6 | 5 | 5 | Definitely improved |
| S. B. | 57 | Hypertensive and arteriosclerotic heart disease | ½ | 5 | 4 | 3 | Definitely improved |
| M. S. | 68 | Hypertensive and arteriosclerotic heart disease | 2 | 7 | 6 | 4 | Definitely improved |
| E. H. | 59 | Hypertensive and arteriosclerotic heart disease; diabetes mellitus | 5 | 6 | 5 | 4 | Inconclusive |

Each course usually lasted two weeks, occasionally three weeks, and was alternated between periods of placebo and periods of papaverine, or a placebo period preceded and followed each papaverine period when a period without any medication interrupted the observations. In each instance there was a variable period up to four weeks in which the patient was educated to the procedures before starting the actual courses. Throughout the study glyceryl trinitrate in minimal quantities was permitted.

*Results.*—A total of 17 patients were studied in this way, 11 men and 6 women varying in age from 52 to 72. (Observations are recorded in the accompanying table.) The duration of the history of angina pectoris before the study was started ranged from six months to fifteen years. These patients were kept under observa-

20. Those patients requiring glyceryl trinitrate were instructed to reduce the number of tablets used to a minimum.

21. These were supplied by Eli Lilly & Co. through Dr. K. K. Chen.

tion for five to eleven months (averaging seven months) during this study and were observed in all seasons of the year. Twelve (70 per cent) of these 17 patients were definitely improved by papaverine, 2 (12 per cent) were slightly improved and 3 (18 per cent) were in the inconclusive group. Of the last group, 1 subject had only two courses of papaverine (too brief to obtain a consistent impression) but was definitely improved during the periods of papaverine medication. In 1 of the remaining 2 cases only two courses of papaverine were given, while in the other a spontaneous remission probably occurred.

In the slightly improved group, 1 patient showed definite improvement in three out of four trials with papaverine, and the other subject revealed improvement in four out of five trials.

A few cases are here briefly cited to illustrate the definite improvement that was observed:

Case 1.—J. S., a man aged 63 with arteriosclerotic heart disease, had had for fifteen years a persistently severe anginal syndrome. His habitual status consisted of twenty to twenty-five anginal attacks in a fortnight, each lasting on the average fifteen to thirty minutes and requiring about 7 to 15 tablets of glyceryl trinitrate during the two week period. He was barely able to walk ¼ block. Electrocardiograms revealed no evidence of myocardial infarction. He received eight courses of placebo and six of papaverine medication. During the first course of papaverine medication he had less pain with each episode and could walk 2 to 3 blocks without the occurrence of anginal pain. There was no change in the frequency of anginal attacks but the duration dropped from fifteen to thirty minutes to five to ten minutes on the average. After the third course of papaverine the patient had seventeen anginal episodes as compared to twenty-three during the placebo course but without change in the duration of the pain; he used only 2 tablets of glyceryl trinitrate as compared to 7 while on the placebo; he walked 10 blocks as compared to 5 while on the placebo and suffered less pain with each attack. During the fourth course, the patient had seventeen anginal episodes as compared to twenty-six while on the placebo; he took 2 tablets of glyceryl trinitrate instead of 6 while on the placebo, but there was no change in the average duration of the pain; he walked on the average 9 blocks instead of 6 while on the placebo and experienced less pain while walking. The patient was then able to indulge in a restricted amount of work for the first time in a decade, and despite this he had fewer attacks, which were of shorter duration and required fewer tablets of glyceryl trinitrate to alleviate the pain.

Case 2.—S. B., a woman aged 57 with hypertensive and arteriosclerotic heart disease and status anginosus, had been treated for angina for only five months. During the first three weeks of observation the patient was hospitalized because she complained of intermittent substernal pain throughout the day or, when this was absent, she had two to three attacks a day, each lasting about one-half to one hour. Electrocardiographic study with serial records revealed no evidence of myocardial infarction. She usually took 1 to 2 tablets of glyceryl trinitrate a day and was barely able to walk about her home. When first placed on papaverine the patient had fewer attacks and less pain. During the second trial with this drug she had four anginal episodes as compared to sixteen while on the placebo, each lasting about fifteen minutes instead of the half hour while on the placebo, and she could walk 1 to 2 blocks. While subsequent trial with the placebo revealed continued improvement and the patient suffered fewer attacks compared with the first course, of papaverine, a further period of papaverine following the placebo period showed still fewer attacks, of shorter duration, with less pain and an increase in her walking ability of from 3 to 5 blocks.

Case 3.—C. C., a man aged 63 with arteriosclerotic heart disease, mild diabetes mellitus and angina only on effort, could walk only ½ block without any medication and while receiving the placebo. This distance was almost constant, as it is the distance between the patient's home and his place of worship. After the first course of papaverine he could walk 1 block without stopping. Subsequently, he walked 1 block while on the placebo but 2 to 3 blocks when taking papaverine, and this difference was consistently found during the rest of his six month period of study.

Case 4.—I. B., a man aged 68 with arteriosclerotic heart disease and a five year history of angina pectoris, could walk only ½ block during the control period on the placebo, but while on papaverine he walked 1½ blocks. This improvement continued when he was on the placebo, but when subsequent periods of papaverine were compared with the placebo periods it was found that he could walk 5 to 6 blocks while on the former and only 3 blocks while on the latter.

Case 5.—J. S., a woman aged 52, a housewife with arteriosclerotic heart disease, mild diabetes mellitus and anginal attacks of three years' duration, had a habitual status of twenty anginal seizures a fortnight, lasting about twenty minutes each, and she could walk only 1 to 2 blocks. After a course of papaverine she had only ten attacks in a fortnight, walked 3 blocks, had less pain and could perform more housework. This improvement was consistently noted during the eight month interval of observation when the placebo and papaverine periods were compared.

*Comment.*—It is thus apparent that in the dosage used papaverine has a beneficial effect in about 75 per cent of the cases. Subjective reactions to the drug were similar to those to any drug from which benefit is derived. None of our patients showed any signs or symptoms of addiction and were easily able to get along without the drug. Our experience indicates that any fear of addiction because this is a drug derived from opium is groundless. Even when the drug was given in intravenous doses of 1 to 2 grains three times a week for six to eight months addiction was not manifest.[3] Hence, in our opinion there is no basis for concern regarding the development of addiction, and there is therefore no reason for not continuing medication indefinitely if indicated.

We have not determined whether smaller or larger doses of oral papaverine would have a similar or more salutary action on the anginal syndrome. One patient who received 3 grains (0.2 Gm.) four times a day felt sleepy, but this reaction disappeared after the dose was reduced to 1½ grains four times a day. Our studies on the treatment of premature systole (reported later) demonstrate that 3 grains four times a day may safely be given. Side reactions (e. g. ectopic beats) or unpleasant symptoms (e. g. sleepiness or constipation) did not occur in any of our patients. We have administered the drug before meals simply because little is known about its absorption and excretion.[22] The lack of better results in the 31 cases of Evans and Hoyle [18] is probably attributable to their small dosage.

While our series is admittedly small and the duration of treatment short, our results are definite enough to warrant the wider use of papaverine in the management of patients with the anginal syndrome. Already several private patients with the anginal syndrome have been treated with this drug at our suggestion and improvement was noted in all.

As to its mode of action, papaverine has three possible effects which may contribute to its beneficial effect in preventing or alleviating anginal attacks: 1. It has a mild sedative action and thereby dulls the perception of pain. 5. It has a definite and lasting coronary

22. According to Macht,[5] papaverine in man is unchanged in the body and is excreted chiefly in the urine, bile and small intestine. On the other hand, Goodman and Gilman [5] state that it is not recovered from the excreta or tissues and that its fate in the body is unknown. The question certainly is not yet settled.

dilating action which should make for better coronary irrigation except in severe cases of narrowing. 3. It could prevent or lessen the occurrence of premature systoles or rapid heart action of certain types which are known to lead to anginal pain. In this last respect it acts like, but is superior to, quinidine, since it also has a coronary dilating action which quinidine lacks.[23] Furthermore, the coronary dilating and sedative actions of papaverine combine in one drug the advantages attributed to the xanthine derivatives with that of a hypnotic such as phenobarbital. That sedation alone is not the sole mode of papaverine action is shown by the absence of effect of acetylsalicylic acid or codeine when used on several occasions instead of the placebo.

### EFFECT OF INTRAVENOUSLY ADMINISTERED PAPAVERINE ON PREMATURE BEATS

As far as we know, there have been no clinical studies on the action of papaverine on ectopic rhythms in man. We therefore undertook to determine its effects when used intravenously in adequate doses. For this purpose, 23 patients with various arrhythmias were studied: 12 had premature systoles (6 of auricular origin and 6 of ventricular origin, 3 of the latter being attributable to excess digitalis) with and without fixed coupling; 8 had auricular fibrillation of which 3 were paroxysmal; 1 had a chronic auricular flutter; 2 had supraventricular paroxysmal tachycardia, and 1 had a complete auriculoventricular block with the idioventricular pacemaker above the bifurcation of the bundle.

*Procedure.*—Each patient was placed at bed rest for about ten minutes and then a control electrocardiogram of one of the limb leads was taken. In addition, the cardioscope (Sanborn) was used to follow the effects of the drug. In the case of premature beats the cardioscope was run for about ten minutes to measure the frequency and site of origin, and these cardioscopic observations were continued following administration of the drug.

After the preliminary observations, papaverine hydrochloride was injected intravenously in different doses. We found it possible safely to administer much larger doses than conventionally recommended;[1] thus we have given 3½ grains (0.23 Gm.) in two divided doses of 2 and 1½ grains within ten minutes. Usually, however, 1 to 1½ grains was used and this could be repeated within ten minutes. Doses less than 1 grain we have found usually had no effect. Thus, as in the oral treatment of the anginal syndrome, the secret of success appears to lie in the employment of larger doses than previously given. This is in accord with the observation on eupapaverine,[13] in which 2 to 5 grains in a single dose and up to 30 grains daily was given in cases of pulmonary embolism, angina pectoris and bronchial asthma without any ill effects.

*Results.*—In the 6 cases of auricular premature contractions, papaverine diminished or abolished the ectopic rhythm in 4 cases for a period of from one to six minutes; in the other 2 cases it had no effect. In the 6 cases of ventricular premature systoles, tests were made with one to three injections of papaverine, a total of twelve doses. This caused a sharp diminution or abolition of the ectopic beats in every instance for periods of two to ten minutes, and in one instance (when used as a slow drip in saline solution, case 8) for several hours. There was a lag of up to three and one-half minutes after injection before the papaverine action became apparent. In case 8, two preliminary doses of ½ grain intramuscularly were without effect.

In 8 cases of chronic or paroxysmal auricular fibrillation, papaverine had no effect on the mechanism. In 4 of these, however, papaverine caused the transient occurrence (for thirty to sixty seconds) of ventricular premature beats usually from one focus, with or without fixed coupling. In the case of auricular flutter, 1 grain of papaverine intravenously had no effect on the mechanism but led to the transient occurrence of premature ventricular systoles and a bigeminal rhythm lasting about thirty seconds. In the 2 cases of supraventricular tachycardia, 1½ grains of this drug had no effect in 1; in the other, however, it caused partial auriculoventricular block with the P-R longer than the R-R interval, so that the P was responsible for the second QRST following it. In the patient with complete auriculoventricular block 1 grain of the drug caused a temporary period of ventricular tachycardia lasting about ten seconds, from which the patient recovered without ill effects.

Several illustrative cases presenting ventricular premature systoles are worth reporting in brief:

CASE 6.—E. J., a boy aged 12 years with mitral and aortic valvulitis due to rheumatic fever, with stenosis and regurgitation in each valve, showed auricular fibrillation and frequent ventricular premature systoles due to excess digitalis. When 1 grain of papaverine was injected intravenously the premature systoles completely disappeared for a period of ten minutes. Eight days later, with the arrhythmias still present, even though digitalis had been stopped, another 1 grain of papaverine was given intravenously and again the premature beats were abolished for nine minutes. One month later he was seen again after having been treated with digitalis in the interim. Auricular fibrillation and premature ventricular beats were present with an occasional bigeminal rhythm. One grain of papaverine was injected intravenously over a period of fifteen seconds and resulted in the disappearance of the premature beats for five minutes and a decided decrease in their frequency for another minute. In all three trials with this drug the auricular fibrillation was unaffected.

CASE 7.—A. S., a man aged 55, had a sinus rhythm and frequent premature systoles from one ventricular focus giving rise to a bigeminal and quadrigeminal rhythm; this was caused by excessive doses of digitalis. He was given 1½ grains of papaverine intravenously in twenty-five seconds, and following this the premature systoles disappeared for five and one-half minutes. The ectopic beats returned fifteen minutes after the drug was injected to their previous frequency and another 1½ grains of this drug was administered, with a similar effect.

CASE 8.—A. W., a man aged 55, was admitted to the hospital, in the private service of Drs. H. I. Sapoznik and Richard Langendorf in "shock" with clinical evidence of a recent myocardial infarct. The electrocardiogram revealed ventricular premature systoles from multiple foci occurring with great frequency (fig. 1). Two doses of ½ grain each of papaverine given intramuscularly were without effect. Then, about one hour later, 1½ grains of papaverine dissolved in 125 cc. of 5 per cent dextrose and isotonic solution of sodium chloride was slowly injected intravenously. About twenty minutes later, after approximately 1 grain of the drug had been administered, the electrocardiogram (fig. 2) revealed an almost complete absence of ectopic beats, only one being found in the entire long five lead tracing. Fairly continuous cardioscopic observation over the next twelve hours showed that the frequency of the premature systoles was definitely reduced. Shortly before the patient's death a brief run of paroxysmal ventricular tachycardia was noted which subsided. About fifteen minutes before death continuous cardioscopy revealed a slow regular rhythm of unknown origin, followed by cardiac standstill. Permission for autopsy was not granted.

23. Elek, S. R., and Katz, L. N.: J. Pharmacol. & Exper. Therap. 75: 178, 1942.

*Comment.*—Our experience with papaverine demonstrates clearly that its intravenous administration is valuable in temporarily reducing the number of premature beats or abrogating them entirely; this applied to those of auricular as well as of ventricular origin. However, papaverine appears to be more effective in depressing ventricular premature systoles. This property is especially advantageous in recent myocardial infarction, since the premature systoles represent an added burden on the heart and may, if of ventricular origin, result in fatal ventricular fibrillation. By reducing or abolishing the premature beats for a short period of time, one lessens these risks. There is no contraindication for its use in the presence of premature systoles, since papaverine does not depress the heart, as is the case with quinidine, and its powerful and lasting coronary dilating action is an advantage. The blood pressure drop that occurs with papaverine [24] is too small to be hazardous. In no instance did we find that it increased the frequency of the premature beats, although on two occasions it did not affect auricular premature systoles. There is no reason why it may not be administered intravenously repeatedly without risk, but this may be unnecessary since, as will be shown, oral administration can be used for continuation of the desired papaverine effect.

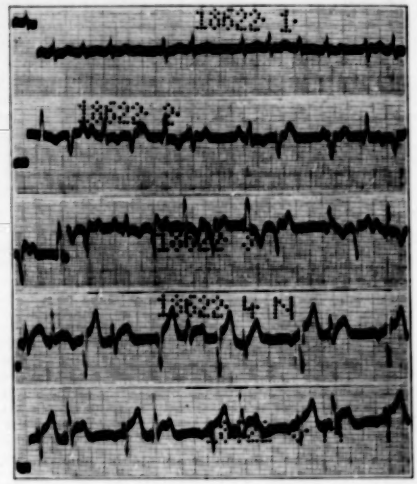


Fig. 1 (case 8).—Electrocardiographic tracing, three limb leads and chest leads $CF_2$ and $CF_4$ before papaverine was administered. Sinus arrhythmia. Tall $P_2$ and $P_3$ and inverted P in chest leads. QRST configuration is suggestive of an atypical infarction of posterior wall. Frequent ventricular premature systoles from multiple foci, at times interpolated, at other times with bigeminal rhythm. Occasional nodal escape. "Chaotic" heart action.

Papaverine has thus proved of no value in reversing paroxysmal or chronic auricular fibrillation, paroxysmal auricular flutter or supraventricular paroxysmal tachycardia. There is at present no indication for the use of intravenous papaverine in these ectopic rhythms; it appears to have no effect in abolishing them, although more studies on this aspect of the problem are desirable. When the heart is depressed and premature beats are absent, papaverine may at times lead to transient ectopic rhythms of ventricular origin, either premature beats or paroxysmal tachycardia. In this regard it is no different from digitalis or quinidine. Papaverine has the advantage over the latter drugs in that it may be injected intravenously in large doses with greater safety. In fact, it will abolish the premature systoles occurring when an excess of digitalis has been given. It is interesting that in the group of patients studied it caused acceleration of the sinus rate but not the idioventricular pacemaker and that in a few instances it resulted in intraventricular block and auriculoventricular block and caused the occurrence of premature systoles and paroxysmal tachycardia of ventricular origin—effects similar to those obtained in our studies in the dog.[9] These undesirable but transient side actions suggest that intravenous papaverine should be used to abolish premature systoles (auricular or ventricular) only when their frequency and the state of the patient suggests that they are detrimental to his welfare. This is particularly the case after a recent myocardial infarct.

When an indication exists for the eradication or reduction of premature systoles occurring during the course of a recent myocardial infarct, or for the alleviation of a severe paroxysm of anginal pain, or when the desired action of intravenously administered papaverine is not attained by several discrete injections, it may be given slowly by intravenous drip in appropriate volume after being dissolved in diluted form in isotonic solution of sodium chloride or saline-dextrose solution (for example, case 8). This is advantageous in avoiding the occurrence of block or transient ectopic rhythms, since it is given in less concentrated form. There is the further advantage that the drip can be stopped at will when necessary if these undesirable effects occur. In addition, the beneficial effect can be protracted over longer periods when desired by this method.

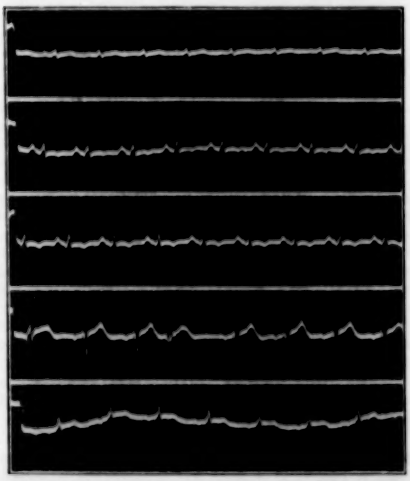

Fig. 2 (case 8).—Electrocardiographic tracing after 1 grain of papaverine was given intravenously by slow drip. Only one ventricular premature systole present (in $CF_4$).

24. Mulinos, Schulman and Mufson,[4] Macht.[9]

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194

### EFFECT OF ORAL ADMINISTRATION OF PAPAVERINE ON PREMATURE SYSTOLES

The temporary abolition of premature systoles with intravenous papaverine suggested that oral administration might have therapeutic effects.

*Procedure.*—Five patients were selected for continuous observation and were hospitalized in order to obviate the variable factors which, in ambulatory clinic patients, make it difficult to evaluate the action of the drug. The patients chosen were referred to us because of the persistence of frequent premature beats for long periods of time. Before being admitted to the ward the patients were examined on three or four occasions in the Heart Station to check the frequency and persistence of the ectopic beats. In 4 of our patients a careful history revealed that digitalis had not been taken at all or not for at least six months preceding our study. The admission to the hospital of the fifth patient was deferred for two weeks because she had taken 2 cat units of digitalis in the fortnight preceding her last visit to the Heart Station.

In the hospital the subjects followed the usual routine of patients not confined to bed: They were permitted to smoke, walk about, receive visitors and occasionally rested in the afternoon for an hour. They were on a full diet and received no medication other than the drug tested. After a suitable control period of two to seven days they were placed on papaverine hydrochloride for four to eight days. This was repeated twice in each case. The 1½ grain tablets, previously employed in the treatment of the anginal syndrome, were used. The usual dose given was 3 grains four to five times a day at three or four hour intervals, either before or after meals. No drugs were given in the intervals between papaverine medication.

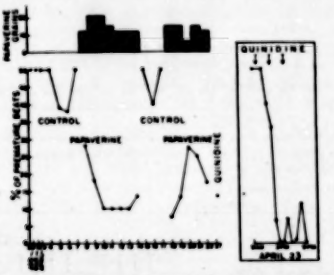


Fig. 3 (case 9).—Summary of protocol: at right, in frame, are hourly observations on day that patient was on quinidine (arrows show time of administration of 3 grains). Ordinates below show percentage of premature to total beats, either daily average or, in frame, hourly average; above, total grains of papaverine in a day.

The number of premature beats was ascertained for ten minutes, at the radial pulse by palpation, at the cardiac apex by auscultation or by cardioscopy, two or three times a day at approximately 9 a. m., 12:30 p. m. and 6 p. m. On several patients hourly observations were conducted from 9 a. m. to 9 p. m. toward the end of the study in order to obtain a better perspective of the variability of the ectopic beats in control periods and crudely to estimate the lag of papaverine effect and its persistence. For comparison, in several subjects, similar hourly observations were made with quinidine sulfate (3 to 5 grains orally three or four times a day).

The patients selected were 4 men and 1 woman between the ages of 45 and 69. Two showed clinical evidence of heart disease. Three were Negroes. In 3 the premature systoles were ventricular, in 1 both ventricular and nodal and in the last auricular.

*Results.*—The data on the 5 cases so studied are summarized in figures 3 to 7. The results can best be presented by briefly describing each case.

CASE 9.—S. J., a Negro aged 57, first felt skipping of the heart about eight months before admission and more frequently in the last few months. On Jan. 20, 1942 bigeminal rhythm was noted during a visit to the Mandel Clinic and was confirmed by the electrocardiogram, which showed ventricular premature systoles with fixed coupling. The patient had not received digitalis at any time. Physical examination gave entirely negative results and the blood pressure was normal. A teleroentgenogram showed left ventricular enlargement. The serologic examination gave negative results. The observations are summarized in figure 3.

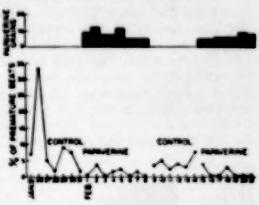


Fig. 4 (case 10.)—Summary of protocol. Conventions as in figure 3.

During both periods of papaverine medication the frequency of premature beats decreased sharply, from an average of 47 per cent of all the beats, in each of the two control periods, to 15 per cent and 18 per cent during drug treatment. The action of papaverine disappeared in about twelve hours after cessation of treatment. Only in the first papaverine interval was there any tendency for the effect to become more pronounced as the drug medication was continued. The effect of quinidine was about as strong as that of papaverine during the single day it was tested.

CASE 10.—A. M., a man aged 65, had arteriosclerotic and hypertensive heart disease and peripheral vascular arteriosclerosis. The heart was enlarged but no murmurs were present. The blood pressure was 160 mm. of mercury systolic and 112 diastolic. Frequent premature systoles, first noted in November 1941, were confirmed by an electrocardiogram, which showed them to be from multiple ventricular foci; the patient was not aware of them. There was also a left axis shift in the electrocardiogram, and the teleroentgenogram revealed left ventricular enlargement and a calcific aorta. Serologic examination gave negative results. The observations of the effect of papaverine are summarized in figure 4.

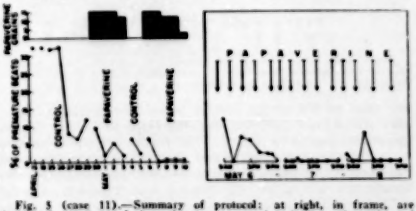


Fig. 5 (case 11).—Summary of protocol: at right, in frame, are hourly observations of three days on papaverine (arrows show time of administration of 3 grains). Conventions as in figure 3.

While the results in this case appear to be less striking than in the previous one, nevertheless, on an actual percentage basis, the effect is about as great. Thus in the control period the premature beats constituted 9.5 per cent and 4 per cent of all the beats, but during papaverine treatment only 1.5 per cent. This represents a reduction of about one third and one sixth respectively, whereas in case 9 it was about one third.

Case 11.—L. W., a Negro woman aged 49, was hospitalized elsewhere because of mild congestive heart failure. In March 1942 an electrocardiogram showed frequent ventricular and nodal premature systoles with coupling. The patient had felt a skipping of the heart since 1941, but this was not troublesome. She was found to have an enlarged heart on physical examination, an aortic valvular insufficiency and an Austin Flint murmur. Left ventricular enlargement was present in the teleroentgenogram and a left ventricular preponderance in the electrocardiogram. Serologic examination gave negative results but the cardiac findings suggested a syphilitic etiology. The observations on the effect of papaverine are shown in figure 5.

Unlike the former two, this patient showed a decline in the frequency of the premature beats on hospitalization. Nevertheless a further reduction following papaverine could be demonstrated. Thus, in the first control period in the ward, the ectopic beats constituted 18 per cent of all beats, while in the first papaverine interval they were only 4.5 per cent. In the two days of the second control period, the premature beats were still 4.5 per cent, but they decreased to 1.5 per cent in the second papaverine period. The results are not as definite as in the other cases and further observations after papaverine was stopped would have been desirable, but this was not possible because the patient left the hospital against advice. On the right hand side of figure 5 are plotted the hourly readings on the first three days of the second papaverine period to show the narrow range of scatter of the observations.

Case 12.—A. F., a Negro aged 45, was informed at another institution of the presence of premature systoles in 1939, but he was unaware of their presence. The diagnosis of syphilitic cardiovascular disease was made at that time and antisyphilitic treatment has since been administered. The Wassermann and Kahn reactions were 4 plus. The electrocardiogram revealed frequent ventricular premature beats from one focus, with fixed coupling, and a left ventricular preponderance.

The observations are illustrated in figure 6. The patient was seen on October 3 and February 26 and admitted to the hospital on March 5, where he stayed for sixteen days. He was then discharged, seen again on April 1 and 6 and readmitted to the ward for another period of study on April 11. During the first control period the premature systoles constituted 21 per cent of the total beats; on papaverine medication they decreased to 6.5 per cent—a striking effect. However, in the subsequent control interval their incidence became even less, 1 per cent. But when the patient was seen again on April 1 the premature beats were as frequent as before, and this was true also five days later. Hence it is fair to infer that part of the improvement was simply due to hospitalization, although our evidence inclines us to the alternative view that the effect of papaverine in reducing the incidence of the premature beats persisted. This is comparable to the alleviation of the anginal syndrome, which continues for some time after its abolition by glyceryl trinitrate until some episode initiates it again. There is no reason to doubt that interfering with the chain of events causing premature systoles may bring about a decrease in their frequency which outlasts the period of drug administration. There is no direct evidence to suggest that this after-effect is the result of a cumulative action such as is found with digitalis.

That papaverine did diminish the frequency of the premature systoles is shown in the second period of observation. Here the incidence of premature beats was 16 per cent of the total beats in the control period; during papaverine treatment this was reduced to 4.5 per cent but returned to 29 per cent in the two days after papaverine was stopped.

On April 24 and 25 quinidine was tested, and the results were compared with those of the control interval of the 22d and the 23d. The effect was striking and about equal to that of papaverine given on the 26th. A similar reduction of ectopic beats was found on the 29th with papaverine. The observations after the 23d were made primarily to note the hourly variations; these are illustrated in figure 6.

In this case, unlike the preceding ones, the ratio of premature to sinus beats is more variable. Nevertheless, the effect of papaverine is definite and convincing.

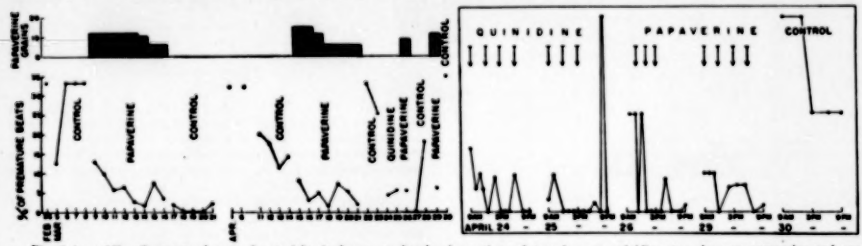


Fig. 6 (case 12).—Summary of protocol: at right, in frame, are hourly observations of two days on quinidine, two days on papaverine and one control day (arrows show time of administration of 3 grains of quinidine and 3 grains of papaverine, respectively). Conventions as in figure 3.

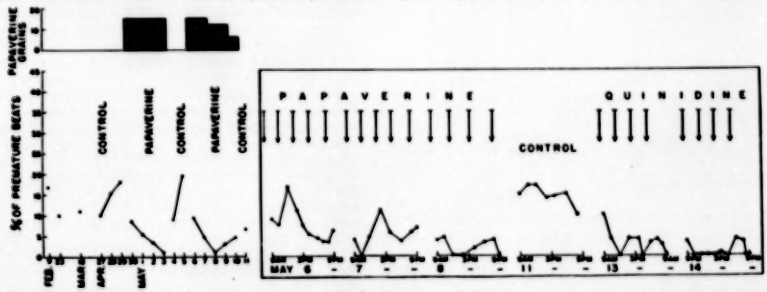


Fig. 7 (case 13).—Summary of protocol: at right, in frame, are hourly observations of three days on papaverine, one control day and two days on quinidine (arrows show time of administration of 3 grains of papaverine and 3 grains of quinidine [the first dose on May 14 was 6 grains] respectively). Conventions as in figure 3.

CASE 13.—P. B., a white man aged 40, had been rejected by several business firms since 1935 because of frequent premature beats. He was first seen at the Mandel Clinic in April 1940, at which time the electrocardiogram showed auricular premature systoles. He received quinidine by mouth (3 grains four times a day) but without appreciable results. His heart was normal on physical examination and in the teleroentgenogram. Blood pressure was normal and serologic examinations gave negative results; the electrocardiogram was normal except for the auricular premature beats.

The observations following administration of papaverine are shown in figure 7. Papaverine had a definite effect in the two trials, decreasing the frequency of the premature beats from 15 per cent, 13 per cent and 11 per cent of the total beats in the control intervals to 4.5 per cent and 4 per cent during the two periods of papaverine administration. The hourly distribution of readings is plotted on the right hand side of figure 7 during several papaverine, quinidine and control days. The effects of the papaverine and quinidine were about equal.

*Comment.*—Our evidence demonstrates that papaverine administered orally in sufficiently large doses has a definite effect in abolishing or reducing the number of premature systoles of ventricular, nodal or auricular origin.

As a result of our experience we recommend a total dose of papaverine of from 4½ to 21 grains (0.29 to 1.4 Gm.) a day, given four or five times at intervals of three to four hours. It may be taken before or after meals. The schedule may be varied according to the degree of abolition of the premature beats or according to the alleviation of symptoms, when present, arising from them. If symptoms occur at night and interfere with the patient's sleep, the last dose should be given before bedtime. A favorable result can be achieved with as little as 1½ grains three times a day. In long term medication the aim should obviously be the use of the least quantity of papaverine required for an effect, since with larger doses the sedative action may become more prominent and even disturbing. One patient felt sleepy when receiving 3 grains five times a day, but this sensation promptly disappeared when the dosage was reduced. However, this hypnotic effect may be an advantage as, for example, in a patient with a myocardial infarct and premature systoles, or in patients requiring sedation for other reasons.

The results with oral papaverine in our series are comparable to those obtained with oral quinidine. We believe that papaverine is superior to quinidine, since we have not encountered any idiosyncrasy or the toxic symptoms occasionally caused by quinidine. Furthermore the former, unlike the latter, is not a myocardial depressant.[9] The concomitant administration of papaverine and quinidine is feasible when the effacement or reduction of premature systoles is urgently indicated or when quinidine toxicity appears and requires stoppage of this drug.

Usually the effect of papaverine wears off within twenty-four hours after its discontinuance, but the intervals of papaverine medication in our cases were relatively short, and it is possible that with longer periods the abolition or diminution of the premature systoles might persist longer after cessation of the drug, as it was in 2 of our cases (cases 11 and 12).

Our experience with oral papaverine indicates that it is a useful and meritorious drug for the eradication or reduction in the number of premature systoles. It can be given over long periods, either therapeutically or prophylactically. It has particular utility in cases in which the premature beats produce troublesome symptoms and in those in which the condition is not particularly improved by quinidine. Its employment should be encouraged, especially in cases presenting clinical evidence of coronary insufficiency. Its lasting and strong coronary dilating action and its sedative effects are features that are desirable and supplemental. Abrogating or reducing the number of premature systoles may prevent one of the circumstances leading to anginal attacks and to the unwanted occurrence of paroxysmal rapid heart action. The latter is to be avoided, especially when of ventricular origin, for it is unnecessary to emphasize that one of the risks leading to sudden death in coronary disease is the occurrence of irreversible ventricular fibrillation. Any drug that will lessen the danger of this occurrence is obviously desirable. Our experiences with animals and the data on man presented in this report show that papaverine is such a drug.[25]

## SUMMARY AND CONCLUSIONS

1. The clinical report of the effect of papaverine on the anginal syndrome and on premature systoles presented here was initiated as a result of previous experimental studies on the dog's heart.

2. Oral papaverine in doses of 1½ grains three or four times a day has proved highly successful in about 75 per cent of 17 intensively studied patients with the anginal syndrome.

3. Intravenously administered papaverine in doses of 1 to 1½ grains causes a temporary abolition or reduction in the number of premature systoles, the effect lasting from two to ten minutes. It appears to be more successful in suppressing ventricular premature beats than auricular ones. For this purpose it may be given either in divided doses or in a continuous intravenous drip, diluted in saline or saline-dextrose solution.

4. Oral papaverine, in doses up to 3 grains four or five times a day had a decided effect in eradicating or reducing the frequency of premature auricular, nodal or ventricular systoles in 5 carefully studied patients. In this respect its favorable action is comparable to that of quinidine.

5. The oral administration of papaverine in heart disease is indicated in (1) the management of patients suffering from the anginal syndrome and (2) the eradication of premature beats. Its use intravenously is indicated for temporary abrogation or diminution of the frequency of premature systoles when these constitute a hazard (e. g. following a myocardial infarct) and for alleviation of a severe paroxysm of anginal pain. There is no contraindication to its use except possibly intravenously in complete auriculoventricular block.

6. Papaverine is superior to quinidine because: 1. It is a potent and lasting coronary vasodilator. 2. It may be given intravenously in large doses with a wide margin of safety. 3. It has a mild sedative action. 4. It is not a myocardial depressant. 5. It does not cause the toxic signs sometimes resulting from quinidine.

7. The only toxic effects produced by papaverine are the occurrence of sleepiness when given orally in large amounts and the occurrence of transient intraventricular and auriculoventricular block, and occasionally transient ectopic rhythms previously absent, both lasting less than one minute, when it is given intravenously. Our experience convinces us that there is no evidence of any narcotic addiction from its use.

8. Papaverine should be employed in adequate doses, larger than those conventionally recommended.

Twenty-Ninth Street and Ellis Avenue.

25. Recently relief of pain in acute myocardial infarction has been obtained from the intravenous use of papaverine, 1 to 1½ grains.

# THE ROLE OF ARTIFICIAL INSEMINATION IN THE TREATMENT OF STERILITY

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BALTIMORE

Artificial insemination or impregnation, as some term it, is one of those rare medical entities which cannot be traced back to Hippocrates. Furthermore, no reference exists to it among preliterate peoples.[1] In fact, its first human application was made only one hundred and fifty years ago.

According to the legend, the procedure was first evolved by fourteenth century Arabs in the breeding of horses. The legend specifically states that warring tribes stole into the enemy's camp and artificially inseminated well bred mares with the semen of inferior stallions—a practice without application in today's warfare of tanks.[2] In 1680 Jan Swammerdam, physician, mystic and natural philosopher of Leyden, reported unsuccessful attempts to fecundate artificially the eggs of fish, an experiment accomplished by Jacobi twenty years later. The success of the abbé Lazarro Spallanzani in first artificially fertilizing an insect, then an amphibian and finally a dog is well known. After the intravaginal injection of semen the bitch was isolated in the abbé's own quarters and sixty-two days later brought forth 3 puppies all resembling the sire. Perhaps ten years later the illustrious John Hunter first succeeded in thus impregnating the wife of a linen draper on the Strand. The merchant was sterile because of hypospadias, and Hunter injected the husband's misdirected semen into the wife's vagina.[3] Normal pregnancy followed. J. Marion Sims in 1866 reported the first successful case in this country. Sims at first championed the procedure and later condemned both it and his own part in it on the ground that it was an immoral medical practice. Since 1907, the year that the Russian physiologist Iwanoff published his distinguished monograph on artificial insemination, it has played an increasingly important role in animal husbandry. Hundreds of horses, cattle, pigs and sheep are conceived by it each year in the Soviet Union. The Russian government has blooded males quartered throughout the agrarian regions in scores of animal breeding stations, and the peasants are encouraged to bring their mares, cows, ewes and sows for impregnation. In this way Russia improves the quality of the livestock, for by artificial insemination 1 blooded stallion may beget a half dozen or more colts at one service. According to Kersin, as many as 15,000 ewes were inseminated by 1 ram in the breeding season of 1936, and more than 1,000 cows by 1 bull. The average proportion of conceptions in the ewes was 96.6 per cent and in the cows 93.7 per cent.[3] The Animal Husbandry Division of the United States Department of Agriculture, has become greatly interested in this topic and their seventy page circular written by Lambert and McKenzie is at once a scholarly and an amazing survey of the theory and practice of artificial insemination in the horse, cow, sheep, pig, dog, fox, rabbit, chicken and turkey.[3]

Physicians to the human race, in comparison with physicians to dumb brutes, are leagues behind in both the scientific investigation and the successful practice of artificial insemination. To be sure, we are trammeled by conventions, moral codes and frailties of human character, which never hinder the stockbreeder.

Three of the largest human series carried out by a single investigator are those of Schorohowa [4] reported in 1927, of Cary [1] in 1940 and of Schultze [5] in 1941. Schorohowa reports 50 cases with twenty-two successes. Cary 37 with fifteen pregnancies and Schultze one hundred and two attempts with fifteen successful. Schorohowa's report, the most optimistic, is far from convincing. The figures do not tally and there is a disturbing lack of detail in regard to such matters as the number of injections performed in each case. Furthermore, half of his successful results appear to have followed injection during the most sterile phase of the cycle, within one to three days before an expected menses. Schultze's and Cary's papers, on the other hand, are quite detailed and accurate.

A consideration of the role of artificial insemination in the treatment of human sterility brings to the fore several matters for frank discussion. In the first place, when should artificial insemination be used? In the second place, what technic is to be followed? In the third place, what are its moral and legal aspects? Each topic is highly controversial.

## INDICATIONS AND TECHNIC

The indications for artificial insemination may be divided into three main groups: In group A are those cases in which intravaginal coitus between 2 fertile individuals is impossible because of mechanical factors: impotence, hypospadias, vaginismus, tumors or excessive obesity. Group B is an all inclusive group made up of chronically sterile couples who finally qualify for this—the sterility treatment of last resort. Conditions admitting a couple to group B are legion, but I shall content myself in simply listing those printed in the three papers of Schorohowa, Schultze and Cary. They are anteflexed uterus with conical cervix, retroposed uterus with conical cervix, uncomplicated anteflexion, uncomplicated retroflexion, hypoplasia of the uterus, relaxed perineal body, salpingo-oophoritis, endometritis, enlarged uterus, cervical abnormalities: such as stenosis, endocervicitis and hypertrophy of the cervical mucous membrane, and a subnormal semen. In the third group, group C, are included only those cases in which the husband is sterile and the wife apparently fertile, or in which the husband has cacogenic hereditary characters which make a child sired by him ill advised.

Schultze used artificial insemination in the treatment of 102 out of 2,000 sterility cases (5 per cent), while Schorohowa employed it fifty times in a series of 586 cases (9 per cent).

All physicians accept the value of artificial insemination in the treatment of groups A and C, that is when intravaginal coitus is impossible or when the semen of a fertile donor is substituted for the sterile or cacogenic semen of the husband.

From the Department of Obstetrics, Johns Hopkins University and Hospital.

Read before the Second Congress on Obstetrics and Gynecology, St. Louis, April 9, 1942.

1. Cary, W. H.: Experience with Artificial Impregnation in Treating Sterility, J. A. M. A. **114**: 2183 (June 1) 1940.

2. Guttmacher, A. F.: Life in the Making, New York, Viking Press, 1933.

3. Lambert, W. S., and McKenzie, F. F.: Artificial Insemination in Livestock Breeding, circular 567, Washington, D. C., U. S. Department of Agriculture, 1940.

4. Schorohowa, A. A.: La fécondation artificielle dans l'espèce humaine, Gynéc. et obst. **15**: 132 (Feb.) 1927.

5. Schultze, G. K. F.: Künstliche Befruchtung: Ihre Stellung in Gesamtrahmen der Sterilitätsbehandlung, Zentralbl. f. Gynäk. **65**: 988, 1941.

I have had 2 patients in group A. The husbands were incapable of coitus but ejaculation of semen was possible by masturbation. In each, pregnancy occurred during the second course of intravaginal injections of the husband's semen. Cary, in his series of 37 artificial inseminations, had 1 case of hypospadias in which treatment was successful. Schultze had 48 couples for whom coitus was impossible. The women of all were treated by the intrauterine injection of the husband's semen, and only 6 became pregnant. As I shall point out later, his low incidence of success in the A group may well have been that his patients received intrauterine injections, while Cary's and mine were inseminated intracervically or intravaginally.

I have had 27 cases in group C, which constitutes apparently fertile women who receive injections with semen collected from unrelated fertile donors. In 17 cases pregnancy resulted, 3 women are still under treatment and in 7 cases one or several treatments failed and further attempts have been discontinued. Cary reports 19 such cases with eleven pregnancies. If one eliminates the 3 cases which are under current treatment, the combined figures from Cary's series and my own total 43 cases with twenty-eight pregnancies (65 per cent).

It seems pertinent at this point to say a word about artificial insemination with spermatozoa aspirated from the testicle by puncture of men whose epididymides or vasa deferentia are occluded. After Iwanoff had demonstrated the success of this procedure in the horse it was attempted in human cases. The testicles of the sterile husband are needled in several places, and after many punctures a few drops of secretion are aspirated. Two cc. of sterile salt or Locke's solution is then sucked up into the syringe and mixed with the aspirated spermatozoa. The diluted spermatozoa are immediately injected into the wife at a favorable phase of her menstrual cycle. I myself have had no experience with the procedure. Schultze attempted it in 4 cases with failure in all. He states that no authentic successful case has yet been reported. Rohleder reported one pregnancy in a series of 7 patients, but he himself suspected that the success may have been due to extramural activities on the part of the wife. Neither Young nor Cabot index this procedure in their textbooks of urology, and Hinman dismisses the matter with the generality that "it has been tried successfully a few times."

Young, however, gives a detailed description of a somewhat similar procedure in his book on congenital abnormalities. He exposed the testicles, cut across distended tubules of the globus major, aspirated the spermatozoa and injected an estimated 200,000,000 into the uterus of the wife. This rather formidable procedure was done twice on the same patient without success. Young states that Hagner had also tried artificial insemination from aspiration of the epididymis and failed.

The B group is the group about which there is much difference of opinion with regard to the therapeutic value of artificial insemination. These are the cases in which no cause for infertility is found in either partner, or at the most some nonsterilizing abnormality not directly concerned with the delivery or reception of the semen.

From purely the physiologic point of view, artificial insemination ordinarily has no advantage over coitus in treating sterility of undetermined origin, and I am convinced that it is also of little value in sterility due to a subnormal semen. If the spermatozoa are so pathologic that they need "a 3 inch boost" on their 6 inch journey, I believe that they are likely to be sterile when face to face with a fertile egg.

I have performed intravaginal or intracervical inseminations in only 3 group B cases, a total of eighteen injections, with no success. In 2 the husband's semen was defective and in the other case both partners gave normal tests. Schultze employed artificial insemination with the husband's semen in 47 cases of this group. Twenty-eight women had hypoplasia of the uterus and 4 became pregnant but all aborted. Nineteen had cervical lesions and 3 became pregnant. Cary reports fourteen failures and three successes in this group—in 1 case the semen was subnormal and in 2 the women had acute anteflexions. Together Schultze and Cary had 64 cases in group B with 10 pregnancies (16 per cent). It is important to point out that these authors performed intrauterine inseminations. If one is going to treat the problem of subnormal fertility by artificial insemination with the husband's semen, I believe that intrauterine insemination offers greater likelihood of success than the intravaginal or intracervical method, since in reality these have been employed for years through normal coitus. On the other hand, if artificial insemination is simply a substitute for coitus in instances in which it is physically or morally impossible, the intravaginal and intracervical routes are greatly superior.

Many authors make vaginal-cervical insemination absurdly complex. In group C cases, that is in instances in which the semen of a fertile donor has been substituted for that of the sterile husband, I have had 72 per cent success, despite the use of a very simple technic. Semen specimens are bought from medical students or staff members for $5 each. The donor is selected because of racial and physical similarity to the sterile husband. Donors must be free from venereal disease and they must have a good genetic background and a highly normal sperm picture. The specimen is collected by masturbation into a dry, clean, wide necked bottle or drinking glass, no attempt being made to collect it sterilely. There is no need for hurry. If the material is to be injected within two hours of ejaculation it may be kept at room temperature. If a longer period of time is to elapse, it is best kept in a corked bottle or test tube at 6 C.

The animal husbandry group has carried out some fascinating experiments on the effect of the age of the semen specimen on the success of artificial insemination. Walton and Prawochenski shipped ram semen from England to Poland and had successful impregnations twenty-seven hours after collection. Winters in this country reported two successful impregnations with ram semen that had been kept in the laboratory ice box for six days. Gunn reported as great a percentage of impregnations in ewes with semen stored for twenty-eight hours at 6 C. as with fresh semen. The U. S. Department of Agriculture shipped bull semen to Argentina and had at least one successful impregnation. The time elapsed from collection to impregnation was seven days.[9] As far as I know, similar experiments have not been carried out for man, and they would form an important investigative project for a research sterility clinic. Several of my successful results were accomplished with specimens 2 hours old.

The animal husbandry group has shown that the best place to deposit the semen varies with the species. In general it should follow the pattern of normal coitus.

For example, in the cow it should be inserted 1 to 2 cm. within the cervix, while in the sow it should be introduced directly into the uterus. The amount of semen necessary for successful artificial insemination also varies from species to species. In the chicken, for instance, 0.1 cc. is sufficient, while in the sow from 100 to 200 cc. is necessary, depending on the size of the animal.[5] Here again there are no similar scientific data for the human being.

The date for insemination is carefully selected on the basis of the menstrual data. If the cycle is twenty-eight days, the procedure in the first month is to select days 11 and 15, considering the day of the onset of the menses as day 1. If the treatment fails the first month, the next month days 10 and 14 are chosen, the next month days 12 and 16, and so on, varying the days back and forth within the confines of the fertile period. If the patient's average menstrual cycle is more than twenty-eight days, for example thirty-one, I add the difference in days to the ordinary time for the first trial, days 11 and 15. Thus with a thirty-one day cycle, I would begin on days 14 and 18. If the cycle were twenty-five days, I would subtract three, using days 8 and 12 for my first attempt. The watery, transparent character of the cervical mucus is helpful in delimiting the fertile days. Insemination is useless if the canal is exuding thick, viscid, opaque looking mucus.[6]

There is controversy in the literature regarding the value of coitus a few hours preceding artificial insemination in order to produce orgasm and thus perhaps increase the likelihood for ovulation. I have never suggested this to my patients and therefore know that preliminary coitus is not essential to success, and I doubt very much that it either favors or retards it.

All artificial inseminations are performed in my office, not in the hospital. I place the patient in the lithotomy position and elevate the hips slightly by cranking up the middle of the office table. A nonsterile, unlubricated bivalve speculum is inserted and the external os exposed. The blades of the speculum are relaxed so that the cervix just lies free between them. The semen is aspirated into a dry, nonsterile 2 cc. glass syringe to which a metal, intravenous cannula is attached. Without either wiping away or displacing the mucus from the cervical canal, the point of the cannula is introduced 0.5 to 1 cm. within the external os and the semen spurted into the canal in four or five thrusts of the plunger of the syringe, simulating the pressure of ejaculation. As the speculum is withdrawn, the blade is wiped back and forth across the external os half a dozen times to bathe it in the seminal pool which has been formed by the semen running out of the cervix. A piece of absorbent cotton is placed superficially in the introitus to prevent soiling of the clothes with the semen. The end of the table is elevated, and the patient remains on her back with the legs extended in a comfortable position for twenty minutes, the hips still raised. She then gets up and goes about the day's routine. The patient should not have uterine cramps, and if she does it means that the cannula was inserted too high within the canal and some semen got into the uterus. After all, semen with its pungent hyperalkalinity acts distinctly as an irritating foreign body in the human uterus. Following coitus, the spermatozoa normally swim out of the semen deposited in the lower cervical canal and, by the time they gain access to the uterus, have been washed free of the seminal plasma by the friendly cervical mucus.

Using this technic on 29 apparently fertile women, I have obtained 19 pregnancies. Three women are still being treated. The latter have had a total of nineteen inseminations, with no success as yet. Seven have discontinued treatment after from one to ten inseminations; the total for the group being thirty-seven treatments. Four women in the successful group had a single insemination the month of impregnation, 11 had two treatments that month, 3 patients had three and 1 woman had four. The number of months required for success varied. Four patients became pregnant immediately the first month, eight the second month, two the third month, one the fourth month, three the fifth month and one after twenty-three months. The last was my first patient, on whom, from a lack of knowledge, I was performing intrauterine insemination. Omitting this first case, the other 18 successful cases required a total of ninety-two inseminations, or an average of five and one-ninth per case. The equal effectiveness of artificial insemination and normal coitus is suggested by the following case:

A woman aged 31 whose husband, a teacher, was her first cousin, had had two pregnancies, each occurring the first month in which contraceptives were abandoned. The first pregnancy resulted in an acraniac fetus and the second in a spontaneous abortion showing defective germ plasm. In order to dilute the abnormal genes which were so tragically alined through consanguinity, they requested artificial insemination. This was done on the fourteenth and seventeenth days of her cycle, which varied from twenty-eight to thirty-five days. Despite a moderate cervical erosion, she became pregnant the very first month, exactly as she had done previously after coitus.

While doing intravaginal inseminations and inseminations into the lower part of the cervical canal, I have never stirred up or caused a single case of endocervicitis or salpingitis. If the donor is free of venereal disease, inseminations that do not invade the uterus are free of danger. In the 1 case in which I did intrauterine inseminations, my first case, a very mild, low grade inflammation of the right tube developed about forty-eight hours after a treatment. It subsided rapidly and has never recurred.

Among the successful inseminations there were a number of pathologic results—more likely due to a sampling error than to the way conception occurred. Among the fourteen deliveries there was one premature separation, one placenta previa, one ectopic pregnancy, one early abortion and one missed abortion, yielding a total of 10 healthy living children. Five patients remain undelivered.

As stated earlier, I have had little or no experience with intrauterine insemination. If used, it should be reserved for cases in which the husband's semen is injected, to compensate in some doubtful way for its inherent defects or to impregnate a wife who is refractory to ordinary impregnation for some mechanical reason. My skepticism of the value of artificial insemination in the treatment of ordinary sterility is overwhelming and it is difficult to keep an open mind.

Schultze [5] goes into lengthy Teutonic detail about the technic of intrauterine insemination, and I shall condense his material. He insists that the inseminations be performed in a hospital. The donor in an adjacent room is provided with a dry sterile beaker wrapped in a sterile towel. He is also provided with a bell to announce the successful completion of his part in the

6. Guttmacher, A. F., and Shettles, L. B.: Cyclic Changes in Cervical Mucus and Its Practical Importance, Human Fertility 5:14 (Feb.) 1940.

procedure. While the specimen is being obtained, the recipient is placed in the lithotomy position, and the vulva, vagina and cervix are prepared as for a vaginal operation. A warm dry speculum exposes the cervix. As soon as the semen is collected it is aspirated into a warm sterile syringe which is attached to a small catheter that has been inserted into the fundus. Schultze then clamps the cervix to prevent a reflux of the semen into the vagina and slowly injects the whole ejaculate (from 1 to 3 cc.) under very little pressure. He then washes out the catheter by following the semen with 1 to 2 cc. of warm sterile dextrose. A little of the semen often gets into the tubes and sometimes even into the peritoneal cavity. The catheter is then clamped off and strapped to the patient's thigh. It is left in position for two hours and removed. The patient is kept in the hospital overnight. If uterine cramps are severe enough to disturb the stoic German hausfrau, a mild sedative is administered.

Schultze warns of the danger of infection, which he claims is glossed over in many reports. Franz has reported a case of fatal sepsis following the intrauterine technic.

Schultze states that many authors prefer to inject only 1 or 2 drops of semen into the uterus; however, most German authorities prefer to use the whole amount.

### MORAL AND LEGAL ASPECTS

I should like to make a few remarks about the third problem, the moral and legal aspects. Obviously all admit that there is no problem if the husband is the donor. The following four rules, employed when an unrelated donor is used, are simply common sense rules: Rule one, the donor must remain completely anonymous to the recipient and to the husband, and the recipient and the husband must remain equally anonymous to the donor. Rule two, before artificial insemination is attempted the physician should know the couple, their intellectual capacity and their emotional stability and, if possible, the likelihood of a permanent marriage; only a small percentage of patients applying qualify for so radical a social procedure. When a physician consents to do an artificial insemination from an unrelated donor, it is really the couple's insignia of good character. Artificial insemination must never be an assembly line kind of medical treatment. Rule three, never urge the procedure, and if either husband or wife is lukewarm drop it completely. Rule four, make the fees low; keep artificial insemination out of the mercenary column. View it as a personal medical service the contribution of an Aesculapian to the happiness of some wretched, worthy, sterile couple.

The legal aspects of insemination from an unrelated donor are very complex and, according to the Bureau of Legal Medicine and Legislation of the American Medical Association, very precise and somewhat forbidding. The attitude of the Bureau is well summarized in an editorial[7] published in 1939. The law is the law, and those physicians who conduct their practices according to the primary law, which preceded all laws—"let your conscience be your guide"—are apparently in error. For such men might wish to forego all signed papers and court proceedings in this procedure. According to the Bureau, such an action would be highly irregular and "a great disservice, possibly an injustice in some cases, to the prospective child and may be depriving the child of rights of inheritance which the husband of the mother fully intends the child to possess and would willingly safeguard if the actualities of the situation were made plain to him. The law of legitimacy and the rights of a legitimate child as contrasted with a child of uncertain parentage are plain . . . and all the wishful thinking will not alter the rights of the child if the incidents of its origin are revealed subsequently and if the rights of the child are not protected by adoption proceedings."[8]

A successful artificial insemination is one of the most satisfying of all medical experiences. It would require a petrified heart not to warm to the scene of a sterile father doting on his two children, who, according to the neighbors, resemble him very closely.

1039 North Calvert Street.

7. Artificial Insemination and Illegitimacy, editorial, J. A. M. A. 112: 1832 (May 6) 1939.

## Clinical Notes, Suggestions and New Instruments

### INTERMITTENT HYPOTHERMIA WITH DISABLING HYPERHIDROSIS

ARTHUR M. HOFFMAN, M.D., AND FREDERICK W. POBIRS, M.D., LOS ANGELES

In 1934 Hines and Bannick[1] described a clinical entity of recurrent hypothermia associated with disabling sweating. It is the only case reported in the literature to date. In 1935 we were privileged to observe a patient with apparently the identical condition. We have studied him during approximately yearly attacks since that date and feel that the observations on this prolonged study and treatment are worth recording as the second instance in the literature.

TABLE 1.—*Results of Tests*

| | |
|---|---|
| 8 a. m. | 0.94 cc. |
| 9 a. m. | 0.98 cc. |
| 10 a. m. | 0.97 cc. |
| 11 a. m. | 0.99 cc. |
| 12 M. | 0.60 cc. |
| 1 p. m. | 0.98 cc. |
| 2 p. m. | 0.99 cc. |
| 3 p. m. | 0.97 cc. |
| 4 p. m. | 0.99 cc. |
| 5 p. m. | 1.00 cc. |

Results are expressed in terms of N/50 acetic acid liberated from acetylcholine iodide solution in twenty minutes by 0.2 cc. of laked blood.

The normal range for human bloods so far as our studies go to date lies between a low of about 0.50 cc. and a high of about 1 cc.

The patient of Hines and Bannick, a man aged 22, was hospitalized because of intermittent attacks of sweating, chills and subnormal temperature. He had had these attacks for ten years. They would begin each year in December or January and would continue for from four to six weeks. "At the onset of each attack there had been a period of nausea and vomiting of from five to seven days; following this gastric upset the usual cycles of sweats and chills had begun. At intervals of approximately two hours there would be a cycle consisting of a drenching sweat, followed by a decided drop in body temperature, a chill lasting ten to thirty minutes, and a gradual return of the temperature to its previous level. The patient was markedly exhausted and was completely disabled. He had lost 12 pounds."

The patient was physically normal except for undernutrition, weakness and the episodes described. Laboratory studies were normal except for low plasma chlorides. Attempted control by atropine was unsuccessful, but oral replacement of salt improved the weakness, although not the attacks of hypothermia and chills. On the assumption that sedation of the central

8. Fishbein, Morris: Personal communication to the author.

From the Santa Fe Coast Lines Hospital Association and the University of Southern California School of Medicine.

1. Hines, Jr., E. A., and Bannick, E. G.: Intermittent Hypothermia with Disabling Hyperhidrosis: Report of a Case with Successful Treatment, Proc. Staff Meet., Mayo Clin. 9: 705 (Nov. 21) 1934.

temperature regulating mechanism might control the bouts of low temperature, sodium amytal ½ grain (0.032 Gm.) was given every four hours. "This caused a striking change in the temperature curve and within eighteen hours the fluctuations ceased and the patient maintained a normal temperature of about 99°." For a control period the medication was discontinued with a return of the hypothermia, sweating and chills. Subsequently the patient remained in good control with sodium amytal and sodium chloride. Hines and Bannick postulated a localized encephalitis as the initiating factor in their patient's disorder but admitted that the long periods of remission between his yearly attacks were difficult to explain on this basis. However, they were not convinced that the patient was entirely normal between spells, and on close questioning the patient's mother admitted that he had been unusually sensitive to heat and cold, and she had not regarded him as quite a normal boy.

Our interest in the clinical picture described was first aroused in January 1935 with the appearance at the Santa F Coast Lines Hospital of a man aged 43, a traveling freight agent for the Santa Fe Railroad, who complained of sweating, chills and weakness. An episode would consist of profuse sweating to the point of saturation of his pajamas about one hour after he would awaken early in the morning. His temperature would vary between 93 and 94.4 F. Within one to two hours a severe chill would occur, often lasting an hour. Following this, his temperature would rise to 98 F. within one to two hours. These attacks would recur each morning for from two to three months and had taken place usually each spring for ten years. One year he had his attack during the winter. In recent years the episodes had been more severe and he had been unable to work during them, but he would feel entirely well the remainder of the year. He had never had spells of nausea and vomiting at the onset of his attacks, as did Hines and Bannick's patient.

In his youth he had had measles, malaria and influenza. There had been no operations or accidents or other serious illness. Although he had been with the Santa Fe Railroad since 1909, he had not presented himself for medical attention prior to 1935 except for a blood count and basal metabolism in 1932 and 1934 because of fatigue. He was an only child with both parents living and well. He was married and his wife had arrested pulmonary tuberculosis. Their one child was healthy.

On physical examination the patient was alert, intelligent and cooperative. He was 5 feet 8 inches (173 cm.) tall and weighed 130 pounds (59 Kg.). In 1932, three years prior to this hospital admission, he had weighed 123 pounds (55.8 Kg.) and in the interval had been as heavy as 136 pounds (61.7 Kg.). The blood pressure was 130 systolic and 80 diastolic. No abnormalities were found on physical examination except during attacks of sweating, at which time he was cold, clammy and pale, with beads of cold perspiration over the entire body sufficient to drench his pajamas. Roentgenograms of the chest were negative. A blood smear was negative for malarial parasites. Table 2 summarizes the laboratory findings from 1932 to 1942. The charts present his temperature records in three of his hospital admissions in 1935, 1936 and 1937. They present graphically the effect of amytal on his hypothermia.

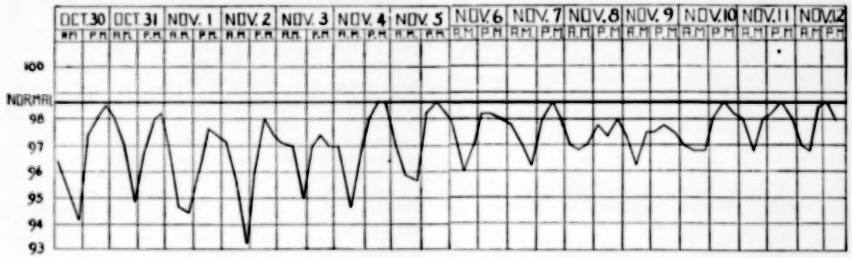


Chart 1.—Temperature chart during hospitalization from Oct. 30 to Nov. 12, 1935. From November 3, ½ grain of amytal was administered every three hours.

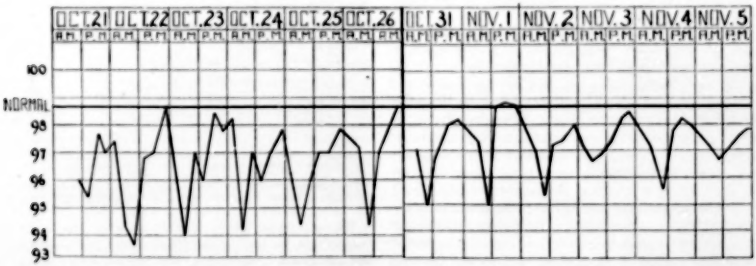


Chart 2.—Temperature chart during hospitalization from Oct. 21 to Nov. 5, 1936. Administration of amytal was stopped from October 21 through October 26. One grain every three hours was administered from October 31 through November 5.

Laboratory findings from 1932 to 1942 are summarized in Table 2. The charts present his temperature records in three of his hospital admissions in 1935, 1936 and 1937. They present graphically the effect of amytal on his hypothermia.

In 1936 roentgenograms of the teeth and of the skull were negative. In 1940 roentgen examination of the kidneys and urinary bladder was negative as was that of the lumbar and of the sacral spine. In 1935 a spinal tap revealed a clear, colorless fluid under normal pressure with 4 cells per cubic centimeter, globulin slightly increased, the Wassermann reaction negative and chlorides 702 mg. per hundred cubic centimeters. Electrocardiograms taken Oct. 22 and 26, 1936 in the midst of an attack revealed slight slurring of the QRS wave, low voltage of the T wave in lead 4 and left ventricular preponderance. On Jan. 13, 1942 an electrocardiogram was identical to those of 1936. Because of the yearly recurrence of these episodes, so often in the spring, sensitization studies were made of sensitivity to pollens, foods, dust and feathers. These were all negative. The patient, moreover, gave an entirely negative allergic history.

He was hospitalized for study and treatment on three occasions—January to February 1935, October 1936 and November 1937. Each succeeding period of hospitalization was shorter than the preceding one, as the patient's disturbance was controlled with amytal. From 1938 to December 1941 he had controlled four attacks by himself by promptly administering the drug at the first manifestation of hypothermia, sweating and chills.

In December 1941 he was admitted to the hospital because of pain in the right lower part of the abdomen of six hours' duration. Laparotomy revealed acute appendicitis with early rupture. He had a hectic postoperative course with a temperature to 101 F. for almost three weeks. Sulfanilamide had been administered in adequate concentration. Fluid developed in the right side of the chest which on aspiration was found to be clear, sterile and free from tubercle bacilli. He made an uneventful recovery. When his temperature had been normal five days he began to have early morning hypothermia to 95 F. and on the third morning thereafter began to sweat and have chills as in his episodes of years past. Administration of amytal 1½ grains (0.1 Gm.) during the night if awake or on early morning rising brought a prompt end to these bouts. Roentgenograms of the chest on discharge were negative. The patient has been quite well since his dismissal, Jan. 6, 1942.

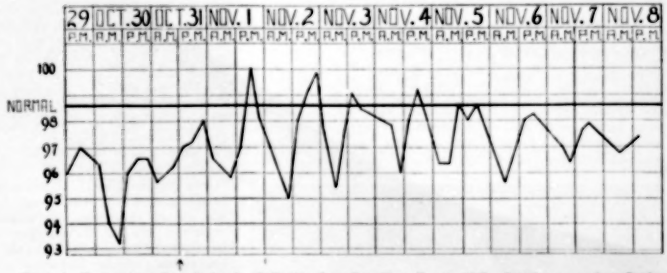


Chart 3.—Temperature chart during hospitalization from Oct. 29 to Nov. 8, 1937. Spinal tap was done October 31 and 1 grain of phenobarbital given. From November 2 through November 8, 1½ grains of amytal was given daily.

### COMMENT

In considering the possible pathogenesis of this patient's disorder, the similarity between his bouts and the sweating seen in the administration of acetylcholine was noted. Thirty mg. of mecholyl chloride (acetylbetamethylcholine chloride) was therefore given subcutaneously. The degree of sweating produced was somewhat more pronounced than that seen in the usual patient to whom it might be administered. However, it had no pronounced effect on his temperature and was not followed by chills.

Acetylcholine is widely distributed in the body and presumably is released at nerve endings with each nerve impulse. It however cannot be measured in the tissue or body fluids. It is rapidly inactivated in the tissues by an enzyme, cholinesterase, which is amenable to quantitative measurement in the body. The theory that a deficiency in choline-esterase might allow for greater acetylcholine activity in our patient and so account for his peculiar episodes seemed intriguing. Through the cooperation of Dr. Gordon A. Alles and Roland C. Hawes, such determinations were made at hourly intervals from the time of the patient's awakening throughout the spell and for several hours thereafter (table 1). They must be interpreted as falling within normal limits.

Reimann [2] has discussed hypothermia seen in nervous persons and its relationship to neurocirculatory asthenia—a condition not uncommon and in contrast to the low grade fevers presumably of neurogenic origin frequently seen. In none of Reimann's case reports, however, was there the degree of hypothermia as seen in our patient and that of Hines and Bannick's; nor did excessive sweating, chills or disabling weakness accompany the hypothermia.

This clinical picture as first described by Hines and Bannick and now supplemented herewith by us seems a distinct and unusual entity. We have reported our seven year observations and studies in detail in the hope that other observers may be able to shed light on its frequency and pathogenesis.

### SUMMARY

The case here reported is the second instance of an unusual and apparently distinct clinical entity consisting of yearly bouts of hypothermia with disabling sweating. Attacks occur about once a year and last for two or three months if uninterrupted by therapy. Each daily attack consists of early morning hypothermia, usually 93 to 94.4 F., followed in an hour by profound drenching hyperhidrosis. Within an hour chills occur, after which the temperature gradually rises to normal. During the periods of bouts the patient is disabled. Administration of amytal as a central nervous system depressant on the temperature regulating center prevents the recurrence of attacks.

1136 West Sixth Street.

TABLE 2.—*Summary of Physical Examinations (1932-1941)*

| | 1932 | 1934 | 1935 | 1936 | 1937 | 1941 |
|---|---|---|---|---|---|---|
| Hemoglobin, per cent | 92 | 110 | 106 | 112 | 115 | 116 |
| Red blood cell count, millions | 5.64 | 4.77 | 4.97 | 5.65 | 5.85 | 4.8 |
| White blood cell count | 5,000 | 3,600 | 5,000 | 6,300 | 6,600 | 8,000 |
| Urine | Albumin, trace | Normal | Acetone, trace | Normal | Normal | Normal |
| Wassermann reaction | ..... | Negative | Negative | Negative | Negative | Negative |
| Kahn reaction | Negative | Negative | Negative | Negative | Negative | |
| Serum albumin | ..... | ..... | 4.62 | 4.70 | 5.4 | |
| Serum globulin | ..... | ..... | 1.58 | 2.05 | 0.9 | |
| Nonprotein nitrogen | ..... | ..... | 37.5 | 30.0 | 25 | |
| Blood uric acid | ..... | ..... | 4.2 | 2.5 | | |
| Blood chlorides | ..... | 437 | 429 | 480 | 400 | |
| Blood sugar | ..... | 89 | ..... | 100 | 106 | |
| Blood calcium | ..... | 9.0 | 9.09 | 9.0 | 9.6 | |
| Inorganic phosphates | ..... | ..... | ..... | 3.7 | 2.5 | |
| Phosphatase | ..... | ..... | ..... | 1.6 | | |
| Basal metabolic rate | −15 | −13 | ..... | −18 | | |
| Blood pressure | ..... | 138/80 | 100/70 | 104/86 | 122/70 | 143/90 |
| Weight | 123 | ..... | ..... | 134 | | |

2. Reimann, H. A.: Subnormal Temperatures and Its Relation to Neurocirculatory Asthenia (Soldier's Heart), J. A. M. A. **115**: 1606-1609 (Nov. 9) 1940.

## WINGED SCAPULA: CASE OCCURRING IN SOLDIER FROM KNAPSACK

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Prominence or "winging" of the scapula was described in 1825 by Velpeau, who attributed this deformity to paralysis of the serratus anterior muscle.[1] Since that time cases of this type have been reported due to poliomyelitis, birth palsy, postinfluenzal neuritis, diphtheria, erysipelas, cerebral palsy and progressive muscular dystrophy.[2] Ball [3] has reported a case of paralysis

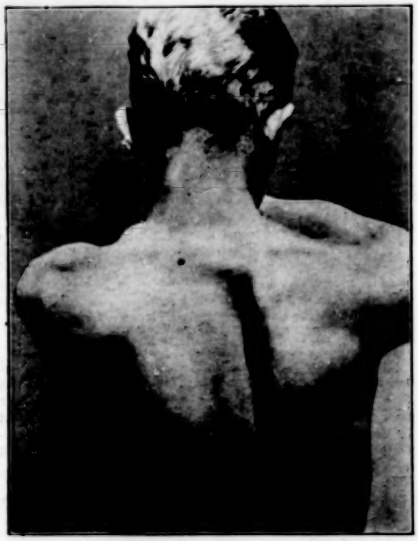

Fig. 1.—Winged right scapula: condition on admission to hospital.

of the serratus anterior in a midshipman following an injection of antitetanic serum, and McGoogan [4] reported 3 cases occurring during the puerperium. Such trauma as the following may cause the same deformity: swinging at a punching bag and missing, being kicked by a horse, pulling energetically on a hand clutch, golfing, using crutches, pressure from a cast, the postural habit of sleeping on the outstretched arm,[5] following an abdominal operation,[6] carrying weights on the shoulder and a direct fall.[1] Search of the literature on this subject fails to reveal mention of winging of the scapula from carrying a knapsack. In view of the expansion of our armed forces during the present emergency, the occurrence of this deformity from such cause, its recognition and its treatment are important.

L. F. L., a private in Company B of the 51st Anti-Aircraft Training Battalion, Coast Artillery, Camp Callan, was admitted to the Station Hospital on Sept. 4, 1941 complaining of difficulty in raising the right arm and of prominence of the right scapula. One week previously while carrying a fully loaded knapsack on a hike he noticed, after the first rest period, a numbness of the right arm. The following day on sitting down the right shoulder blade seemed to "strike the back of the chair." The patient thought that the first symptoms were possibly due to having "strained" the right shoulder while putting his pack on his back. There was no other history of trauma to the shoulder and there was no exposure to cold or dampness. The patient had always been well and strong and had suffered from no serious illnesses in the past. There was no history of familial disease and no history of poliomyelitis. The general physical examination was within normal limits. When the right arm was raised in flexion or abduction the right scapula was prominent (fig. 1), the vertebral border being about 4 inches from the spinous processes and displaced backward about 1½ inches. Active abduction was possible to 160 degrees, flexion to 160 degrees, internal rotation with the arm at the side to 70 degrees and external rotation to 65 degrees. A complete muscle examination revealed a weakness of the serratus anterior muscle. All other muscles rated normal according to Legg's method of muscle testing. The knee and ankle jerks were present and equal. The Kahn test was negative, and urinalysis was within normal limits.

The weakness of the serratus anterior muscle in this instance was probably due to stretching of the long thoracic nerve in swinging the pack on the back or to pressure on the long

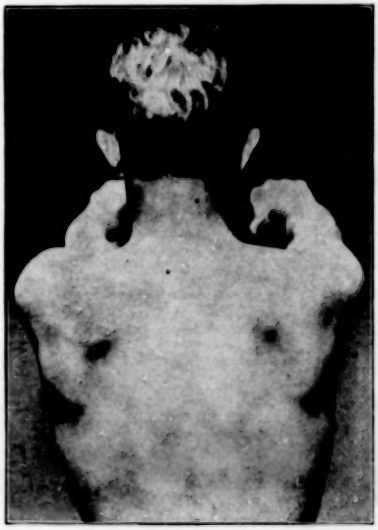

Fig. 2.—Condition four weeks later.

thoracic nerve from the strap of the knapsack against the chest and shoulder. Treatment consisted in support to the arm with a sling, infra-red heat and massage to the shoulder. At the end of one week there was a slight improvement in the muscle power of the serratus anterior. Gradual improvement continued; a check-up examination on September 26, about

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1. Horwitz, M. T., and Tocantins, L. M.: Isolated Paralysis of the Serratus Anterior (Magnus) Muscle, J. Bone & Joint Surg. **20**:720 (July) 1938.

2. Fitchet, S. M.: Injury of the Serratus Magnus Muscle, New England J. Med. **203**:818 (Oct. 23) 1930.

3. Ball, C. R.: Paralysis Following Injection of Antitetanic Serum, U. S. Nav. M. Bull. **37**:305 (April) 1939.

4. McGoogan, L. S.: Isolated Paralysis of the Serratus Anterior Muscle During the Puerperium, Am. J. Obst. & Gynec. **40**:313 (Aug.) 1940.

5. Overpeck, D. O., and Ghormley, R. K.: Paralysis of the Serratus Magnus Muscle, J. A. M. A. **114**:1994 (May 18) 1940.

6. Thorek, S. an: Compression Paralysis of the Long Thoracic Nerve Following Abdominal Operation, Am. J. Surg. **40**:26 (Feb.) 1926.

four weeks after the initial onset of symptoms, showed no evidence of winging of the scapula or any weakness of the serratus anterior (fig. 2).

Various forms of treatment for this deformity have been used in the past. Fitchet [2] advises immobilization and support of the muscle with an airplane splint; Horwitz and Tocantins [3] use a brace elevating the elbow; McGoogan [4] believes that vitamin B therapy is indicated. Ball's [5] patient recovered following the application of galvanic and sinusoidal current. Berkheiser and Shapiro [7] used a plaster spica holding the arm in abduction and external rotation. More recently Foley and Wolf [8] have designed a special brace to relieve the strain on the serratus anterior. For the correction of permanent and disabling deformity the following operations have been devised: anchoring the vertebral border of the scapula to the spinous processes of the fourth to seventh cervical muscles, fixation of the vertebral border of the scapula to the opposite ribs, implantation of the subscapular nerve to the paralyzed serratus muscle and suturing of the middle portion of the pectoral muscle to the angle of the scapula.[9]

## Special Clinical Article

# GAINS AGAINST EPILEPSY

CLINICAL LECTURE AT ATLANTIC CITY SESSION

WILLIAM G. LENNOX, M.D.
BOSTON

A new day—long overdue—is dawning for persons with epilepsy. The ungodly length of the night which has enveloped both patients and physicians is disclosed by a backward glance. If plotted as a curve, medical knowledge about epilepsy would have an initial high point at the time of Hippocrates, followed by a decline to a long, flat level which persisted for two thousand years. About 1700 began a wavering rise. In the last eighty years sharp ascents have coincided with the working lives of Hughlings Jackson, of Gowers and of Hans Berger. Unfortunately a curve representing improved medical treatment lags far behind the rising curve of knowledge. When man lost faith in demons as a cause of seizures, mistreatment by scourgings and trephinings became less popular but no effective positive therapy was substituted. Neither Julius Caesar, Mahomet, nor Lord Byron could purchase any medicine which would influence fits. The years 1857 (bromides), 1912 (phenobarbital) and 1938 (diphenyl hydantoinate) mark precipitous therapeutic advances and surges of new hope in successive generations of epileptic persons.

So rapid has been the increase of knowledge in the last decade that many practitioners of medicine and their patients have been left far behind. So broad has been the advance that any adequate discussion would deal with many subjects: psychology, psychiatry, cerebral circulation and the anatomy, pathology, surgery, physiology, physics and chemistry of the brain. The rest of the body cannot be neglected, for the brain is a constitutional monarch and its actions are influenced by the activity of endocrine glands, by the metabolism of body tissues and by the state of the emotions. Furthermore, epilepsy presents social and economic as well as medical problems. The present war will increase the burden of epilepsy. The lives of the epileptic are not being risked either in fighting or in industry, and inevitable war injuries will greatly increase the present army of half a million persons who are subject to convulsive seizures.

Knowledge of epilepsy has advanced on an uneven front. In the last few years brilliant gains have been scored by neurosurgery.[1] I shall speak only of the advances made in three fields in which my associates and I have been especially interested—electroencephalography, heredity and drug therapy.

## ELECTRICAL PULSATIONS OF THE BRAIN

More than almost any other vital organ, the brain is protected from the inquiring eye and hand of the physician. Diseases of the brain, such as epilepsy, have for many centuries been considered inscrutable and incurable. Dramatically, demonstration that the electrical activity of the brain can be recorded and can be correlated with certain abnormalities of mind or conduct has caused a reorientation and clarification of ideas regarding many of the age old questions about epilepsy. Admittedly, study of the electrical pulsations of the brain, though answering many immediate questions, uncovers new and deeper ones. Admittedly, little is known about the ultimate origin of brain waves, but this ignorance does not prevent productive use of the technic called "electroencephalography." We do not refuse to use the telephone until the nature of electricity is fully understood.

Study of the electrical potentials of the brain has resulted in knowledge of both theoretical and practical value. Electroencephalography demonstrates what Hippocrates suggested, that the seat of seizures is in the brain and not, as some moderns imply, in the intestine, the endocrine glands or the id. In patients having localized or jacksonian convulsions the disordered brain waves arise from one area, but in most patients the disturbance is widely diffused over the cortex. During each of the various types of seizures, petit mal, grand mal and psychic, the form of the electrical pattern is distinctive. The illness of the patient is not confined to the rare periods of seizures, but some degree of cortical dysrhythmia is discernible in nine tenths of patients during a fifteen minute period of observation. Other disorders of the nerves or of conduct not generally identified with epilepsy also have disturbances of brain rhythm. Of children with "behavior problems," inmates of prison, the victims of migraine or of schizophrenia, a third or more have disordered brain rhythms. Detailed treatment of this subject of electroencephalography is in the Gibbs atlas.[2]

Beneath the flimsy borderlines of diagnosis based on symptoms lie the more fundamental physiologic classifications based on the electrical activity of the brain. New possibilities of treatment are opened by these observations. Seventy years ago Maudsley [3] contended that many sudden storms of temper or of peculiar or antisocial action were akin to seizures of epilepsy and should receive hospital and not prison treatment. In a number of patients we have been able to demonstrate the truth of Maudsley's contention. Persons such as he described

7. Berkheiser, E. J., and Shapiro, Fred: Alar Scapula: Traumatic Palsy of Serratus Magnus, J. A. M. A. **108**: 1790 (May 22) 1937.
8. Foley, W. E., and Wolf, Joseph: Scapula Alata, J. Iowa M. Soc. **31**: 424 (Sept.) 1941.
9. Painter, C. F.: Year Book of Industrial and Orthopedic Surgery, Chicago, Year Book Publishers, Inc., 1941.

Aided by grants from the Rockefeller Foundation and the Committee on Human Heredity of the National Research Council.
Read in the General Scientific Meetings at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1942.

From the Neurological Unit of the Boston City Hospital and the Department of Diseases of the Nervous System of Harvard Medical School.

1. Penfield, Wilder, and Erickson, T. C.: Epilepsy and Cerebral Localization, Springfield, Illinois, Charles C Thomas, 1941.
2. Gibbs, Frederic A., and Gibbs, Erna L.: An Atlas of Electroencephalography, Cambridge, Mass., Cummings, 1941.
3. Maudsley, Henry: Body and Mind, New York, D. Appleton & Co., 1871.

have had brain waves similar to the waves of patients suffering from psychomotor epilepsy.

However, doubt may be cast on the serious implications of dysrhythmia by the fact that a disturbed rhythm is present in many persons who have never displayed any peculiarities of mind or conduct. Among 1,000 unselected persons composing so-called normal groups of adults—such as college and medical students, nurses and draftees—Dr. and Mrs. Gibbs [4] found that some peculiarity of brain rhythm was present in 16 per cent and gross dysrhythmia in 2 per cent. Undoubtedly some of these persons had suffered brain injury or had symptoms which could be correlated with the dysrhythmia, but for the majority no such explanation is at hand. Possibly genius or unusual qualities of personality or mind may later be correlated with brain wave patterns which are now termed "abnormal." More serious is the question "May normal persons with abnormal brain waves be persons who are themselves predisposed to epilepsy or an allied disorder, or are 'carriers' of a tendency which may appear in an offspring?"

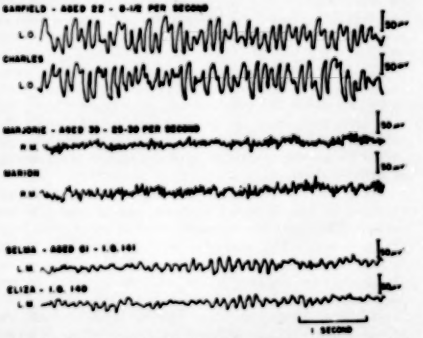


Fig. 1.—Electroencephalographic tracings of three normal identical twins, aged respectively 22, 39 and 61 years. Tracings of the first two twins are grossly abnormal and of the third are a trifle slow. These tracings are five second samples, taken from a record of fifteen minutes' duration. In each instance simultaneous records were made from six different areas of the skull, but a tracing from only one region is reproduced. For the 3 twins the regions used were respectively left occiput (*L. O.*), right motor (*R. M.*) and left motor (*L. M.*). The perpendicular line at the right indicates the signal made by 50 microvolts; the horizontal line at the bottom marks the time of one second. Tracings are reduced one half.

### HEREDITY OF BRAIN WAVES AND EPILEPSY

The doctor is asked no more insistent or difficult question than this: "Should I, an epileptic, or the relative of an epileptic, marry and have children?" The confusion of professional opinion is illustrated by the fact that this question when appearing in Queries and Minor Notes in THE JOURNAL has brought answers which were exactly opposite.[5]

Certain stock answers built from statistical data can be given to inquiring patients. Epilepsy occurs in about 2.8 per cent of the near relatives of noninstitutional patients, or five times more frequently than in the general population. However, the chances of having epileptic offspring are lessened by various circumstances: if the patient has no family history of epilepsy or migraine, if he was mentally normal at birth, if his seizures began late, if a history of brain injury antedated the first seizure, and above all if he marries a person who carries no predisposition to seizures. These criteria are of presumptive value, but those who are most interested want an individual and not a general answer. Of what help is the electroencephalograph?

Obviously, to the insistent question about heredity the pulsations of the brain can give no answer if these pulsations are the result of environmental conditions. Therefore we must first answer these questions: Is the pattern of the electrical waves of the brain a constitutional or an acquired characteristic? Is the electrical pattern traced by the brain comparable to a person's facial expression which is altered by emotions, by injury or by cosmetics or is it like his features, his eyes and nose and ears, which resemble those of parents or grandparents and change but little through the years?

The heredity of identical twins is the same; therefore in these twins characteristics which are due to heredity are identical, whereas those due to environment are different. If the pattern of brain waves is a hereditary trait, then brain waves of identical twins, which have the same heredity, should be the same, whereas the brain waves of nonidentical twins should be different. Dr. and Mrs. Gibbs and I [6] have made records of 65 nonepileptic twins, none of whom had suffered brain injury. Fifty-two twins were believed to be monozygotic and 13 were dizygotic. Without knowing to which class the paired electroencephalographic records belonged, Mrs. Gibbs inspected the records and decided which pairs of tracings were identical and which were different. In 5 per cent her decision was in error, in 8 per cent she was in doubt, and in 87 per cent her judgment was in agreement with the physical criteria of identity. Illustrative tracings of three adult twins are shown in figure 1. The similarity of records of identical twins was especially obvious if the brain waves were abnormal in frequency or in voltage. These observations confirm the study of nine identical normal twins made by the Davises.[7] If records are made under standard conditions and recognition is given to the fact that brain waves are a fluid, not a fixed trait, we believe that the pattern traced by the electrical pulsations of the brain is a hereditary trait. The electroencephalogram may be used, together with measurements of height, weight, and the color of eyes and hair, in decisions involving the identity of twins.

This point settled, we then analyzed the electrical records of twins, 1 or both of which had a history of seizures. In this series of 20 twins there were 12 identical twins, only 1 of which was subject to seizures at the time of examination. In each of these 12 twins the brain wave records of the epileptic twin and of his nonepileptic co-twin were alike with respect to being normal or abnormal and with respect to the underlying dominant rhythm. However, if the epileptic member had suffered brain injury, or if his seizures had been present for many years, his brain wave record presented abnormalities not found in the record of his normal twin. In 2 of these twins the normal co-twin had a history of one or two convulsions at the time of an infection in childhood. In 3 other twins the normal co-twin has had a seizure since the electrical examination was made. In the remaining 7 twins only 1 member has ever had a seizure.

4. Gibbs, Frederic A.; Gibbs, Erna L., and Lennox, W. G.: Electroencephalographic Classification of Epileptics and Controls, Arch. Neurol. & Psychiat., to be published.
5. Marriage in Epilepsy, J. A. M. A. **117**:1402 (Oct. 18) 1941. Pregnancy in Narcolepsy and Petit Mal, ibid. **117**:1662 (Nov. 8) 1941.
6. Lennox, W. G.; Gibbs, F. A., and Gibbs, Erna L.: Twins, Brain Waves and Epilepsy, Arch. Neurol. & Psychiat. **47**:702 (April) 1942.
7. Davis, Hallowell, and Davis, Pauline A.: Action Potentials of the Brain in Normal Persons and in Normal States of Cerebral Activity, Arch. Neurol. & Psychiat. **36**:1214 (Dec.) 1936.

Of these 7 identical twins, 2 proved to be non-epileptic. The seizures present in the first twin were purely symptomatic. This child had received a head injury, following which she had two convulsions, and electrical records showed cortical dysrhythmia. Several months later the brain waves had returned to a normal pattern which was indistinguishable from that of her uninjured co-twin. In the second twins both the patient and his normal brother had normal and identical brain waves. The patient's seizures proved to be hysterical. There remained 5 identical twins who gave a history of chronic epilepsy in 1 twin and no seizures in his co-twin. Instances of this sort have been advanced as substantial evidence against the importance of heredity in epilepsy. In each of these 5 twins the record of the normal twin as well as that of his epileptic co-twin was grossly abnormal. In each instance also the epileptic twin had a history of injury to the brain which antedated his epilepsy. As a result of these observations of twins affected by epilepsy, we believe that essential epilepsy develops on the basis of a pre-existing cerebral dysrhythmia. Each of the identical twins had a predisposition as evidenced by dysrhythmia, but the brain of the epileptic twin received some injury or underwent some physiologic upset which caused the dysrhythmia to be expressed in overt seizures.

We extended the investigation by making electrical records of other members of the immediate family of epileptic patients.[8] Of the 312 relatives examined so far, brain waves were judged to be abnormal in 52 per cent. Corresponding values are 16 per cent for adult normals and 85 for adult epileptics. Both parents of 88 patients were examined. In 27 per cent of these families both parents had abnormal records, and in only 8 per cent were the records of both clearly normal. Other workers have furnished corroborative evidence.[9]

Leaving the sea of brain waves and statistics, what can we conclude about the heredity of epilepsy? We can confirm the opinions which clearminded clinicians have been expressing for many decades. Epilepsy per se is not inherited, but a "predisposition" or "tendency" may be inherited. A predisposition (heredity) lies dormant until activated by injury or serious disturbance of the brain (environment). Both seed and soil are needed for the growth of epilepsy. Both spark and gunpowder are required for the explosion of a fit. This is exactly what clinicians have said for decades about many other illnesses which beset mankind, diabetes, obesity, hypertension and what not.

The evidence which we have collected suggests that an abnormal brain wave pattern which is constitutional and not acquired may indicate a predisposition to epilepsy or some other disorder associated with cerebral dysrhythmia. If this suggestion is confirmed by more extensive study, we may advise epileptic patients and their relatives about children on the basis not of general statistics but of actual observation of the brain wave pattern of those who are married or propose marriage. In arriving at a conclusion, several points deserve emphasis: first, the need for taking into consideration other inheritable and valuable traits which may outweigh the presumably undesirable trait of dysrhythmia; second, the importance of securing a record of the supposedly normal partner, and, third, the need for determining the significance of the degree of abnormality or of the specific pattern of a given brain wave record. This last point is a matter for further research. Dr. and Mrs. Gibbs have divided electroencephalographic records into eighteen different groups. They have compared the distribution of these eighteen classes of records in three groups of persons: 1,000 adult "normal" controls, 129 adult relatives of epileptic patients and 628 adult epileptic patients. Records were counted as abnormal if the dominant frequency of waves of normal or high voltage was outside the range of 8.5 to 12 per second. Records with dominant frequencies which were very slow or very fast or records which showed paroxysmal discharges of high voltage slow or fast waves, so-called "seizure discharges," may be called "grossly abnormal." Very slow or very fast records constituted 7 per cent of the abnormal records in the control group, 11 per cent in the group of relatives and

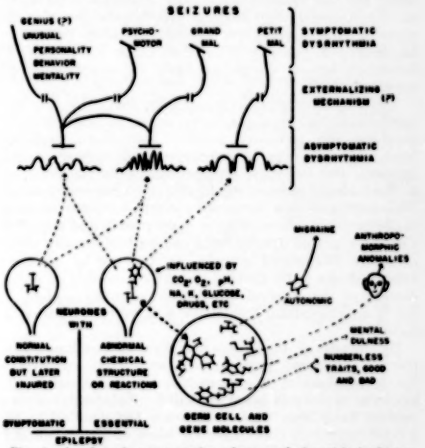


Fig. 2.—A schematic representation of some of the etiologic factors and the mechanism of epilepsy. The large circle at the bottom represents a germ cell containing many large protein molecules which are the genes of various traits. The gene at the left comes to be represented in the neuron, the discharging cell of the brain. This representation is either an abnormal chemical structure of the neuron or an abnormal reaction to stimuli. This abnormal quality results in discharges which are improperly regulated as to rate and voltage, as shown in the electroencephalogram. Three types of asymptomatic dysrhythmia are portrayed, slow (psychic), fast (grand mal) and alternate slow and fast (petit mal). At the top of the chart appear the symptoms which result from the dysrhythmia. There is some as yet not understood externalizing mechanism which makes an asymptomatic dysrhythmia into one which is symptomatic. In addition to the three classic types of seizures there may be allied disorders of personality, of behavior, of mentality and possibly of genius. All this so far represents idiopathic epilepsy. At the lower left hand corner of the chart is a neuron which arises from a germ cell which did not contain the gene of dysrhythmia. If, however, this normal cell is injured, dysrhythmia, both asymptomatic and symptomatic, may result. This combination represents the so-called symptomatic epilepsy.

24 per cent in epileptic patients. Records with "seizure discharges" formed 5 per cent, 13 per cent and 37 per cent of the abnormal records in these three groups. This evidence suggests that grossly abnormal brain waves and especially the patterns which most commonly appear in the records of patients with epilepsy carry a darker hereditary implication than brain waves which differ but moderately from the norm.

Both in the population which is closely related to the epileptic and in the general population, persons with dysrhythmia outnumber those who are subject to seiz-

8. Lennox, W. G.; Gibbs, Erna L., and Gibbs, F. A.: The Inheritance of Epilepsy as Revealed by the Electroencephalograph, J. A. M. A. **113**: 1002 (Sept. 9) 1939; The Inheritance of Cerebral Dysrhythmia and Epilepsy, Arch. Neurol. & Psychiat. **44**: 1155 (Dec.) 1940.

9. Löwenbach, Hans: Electro-Encephalogram in Healthy Relatives of Epileptics: Constitutional Elements in "Idiopathic Epilepsy," Bull. Johns Hopkins Hosp. **65**: 125 (July) 1939. Strauss, Hans; Rahm, W. E., and Barrera, S. E.: Electroencephalographic Studies in Relatives of Epileptics, Proc. Soc. Exper. Biol. & Med. **42**: 207 (Oct.) 1939.

ures twenty times or more. Just as Pearl Harbor silenced the phrase "This is not our war," electroencephalography brings the problem of epilepsy and related disorders before not merely the half million persons in this country who are subject to seizures but also before the millions of persons who have abnormal patterns of brain wave activity. Questions of marriage and children apply not only to persons with seizures but to the very much larger group who may be capable of transmitting the dysrhythmia and the predisposition. The whole problem is greatly enlarged and complicated by the fact that, as indicated earlier, epilepsy is not the only disorder associated with cerebral dysrhythmia. The local war against epilepsy has become a global war against cerebral dysrhythmia and all it represents. This is not a discouraging prospect but one turgid with hope.

Eugenics is given a new weapon, the opportunity to deal not simply with the few victims of a certain disorder but the twenty times more numerous "carriers" of the disorder. Individual prophylaxis has a new meaning, for possibly the enemy's invasion bases can be destroyed, possibly disordered brain waves can be corrected before symptoms have an opportunity to appear.

The word "heredity" connotes the inevitable and the unalterable. Even if this were so, in the case of dysrhythmia the accessory acquired conditions, such as brain injuries, may be prevented and epilepsy never appear. But heredity, represented by dysrhythmia, is a fluid characteristic, modifiable by chemical means. This fact gives new impetus to studies of the chemistry of the brain in relationship to dysrhythmia and seizures. Certain types of dysrhythmia can be temporarily abolished by intellectual activity, by the use of anticonvulsant drugs or by altering the carbon dioxide or sugar content of the cerebral blood. Occasionally prolonged use of anticonvulsant medication will improve a patient's record.

By means of blood samples drawn simultaneously from an internal jugular vein and from an artery, the metabolism of the brain can be studied while its electrical activity is being recorded. Substantial observations have been made which are too detailed to be recited here. A conception of some of the important etiologic aspects of epilepsy is portrayed in figure 2. Areas of most strategic importance for the clinician are two: first, the peculiar chemistry or metabolism of the discharging neurons of the brain which causes dysrhythmia of the brain, and, second, the conditions which cause this dysrhythmia to become externalized in a fit. These two areas have been brought into focus by the use of effective anticonvulsants.

## PHENYTOIN SODIUM

Perhaps the most immediately acceptable of all our lately acquired knowledge is a new and better drug for the control of seizures. Putnam and Merritt believed that continued search might disclose a more effective drug than bromide or phenobarbital, drugs whose effectiveness was discovered by chance. Sodium diphenyl hydantoinate, whose official name is phenytoin sodium and trade name Dilantin Sodium, is the result of their search. Presumably the award of an even more effective anticonvulsant awaits other workers with equal faith and persistence. Already phenytoin sodium is recognized as the drug of choice for patients having grand mal or psychomotor seizures. Its usefulness should not be lessened just because its administration requires careful and intelligent supervision by the attending physician. Ignorance or timidity on the part of the doctor has blighted the budding hope of many a patient. Different writers have reported various degrees of success in the use of this new drug. To mention only the earliest and the latest reports, in treating 267 patients Merritt and Putnam[10] were able to secure satisfactory results in more than two thirds, whereas Finkelman and Arieff,[11] treating 41 patients, obtained continued benefit for only one sixth. If patients are unselected, widely differing results presumably reflect varying degrees of professional experience and skill. Epilepsy is a tough disease which laughs at dull weapons. Phenytoin sodium is a sharp edged weapon which must be used both boldly and deftly.

I myself have never encountered a patient who had suffered lasting hurt from phenytoin sodium, but I have seen a number who reported no benefit from use of the drug but whose seizures stopped when the dosage was increased to the threshold of tolerance. Success can never be attained by giving a fixed amount of medicine to each patient. Usually doctors err on the side of caution. As with the digitalization of a cardiac patient, minor toxic symptoms are to be expected. In severe cases of epilepsy the amount taken daily, 0.3 to 0.6 Gm. (4½ to 9 grains) should be the amount which either will control seizures or is just below the level at which unpleasant symptoms, such as dizziness, muscular incoordination, gastric distress, severe swelling of the gums, excessive activity or loss of weight appear. Incoordination is by far the most frequent symptom. None of the common early symptoms are serious, and the alert physician will not permit his patients to develop symptoms which are serious. Finally, the doctor of the future will treat dysrhythmia before epilepsy begins or will continue to treat it after seizures have disappeared.

The success of phenytoin sodium, which is not hypnotic and which is most effective in certain types of cerebral dysrhythmia, opens a new field for investigation. The opportunities for chemotherapy would seem to be as great in the area of cerebral dysfunction as they have proved to be in the area of bacterial infections.

## THE DIFFUSION OF KNOWLEDGE

More complete knowledge of the cause and treatment of epilepsy can and should be secured, but of what use is knowledge which is sealed in laboratories or in the consulting offices of high fee specialists? The Laymen's League Against Epilepsy has been organized for the encouragement of research and the education of the public. One agency of education is a book about epilepsy written for both doctors and intelligent laymen.[12] However, on the family friend, the practitioner of medicine, rests the principal burden of bringing hope and health to a large group of patients now sadly neglected.

## SUMMARY

In the last ten years remarkable progress has been made in the understanding and in the treatment of epilepsy. Study of the electrical pulsations of the brain have been particularly rewarding in diagnosis, in the localization of cortical lesions and in giving advice regarding marriage and children.

10. Merritt, H. H., and Putnam, T. J.: Sodium Diphenyl Hydantoinate in Treatment of Convulsive Disorders, J. A. M. A. **111**:1068 (Sept. 17) 1938.
11. Finkelman, Isidore, and Arieff, A. J.: Untoward Effects of Phenytoin Sodium in Epilepsy, J. A. M. A. **118**:1209 (April 4) 1942.
12. Lennox, W. G.: Science and Seizures: New Light on Epilepsy and Migraine, New York, Harper & Brothers, 1941.

The obscure ancient terms "idiopathic" and "symptomatic" epilepsy should be replaced by the clearcut modern terms "genetic" and "acquired" epilepsy. The brain wave pattern is believed to be a hereditary trait. Epilepsy is not inherited, but a predisposition to epilepsy is inherited. This predisposition to epilepsy or allied disorders may possibly be evidenced by a hereditary cortical dysrhythmia. Dysrhythmia, however, is not a fixed trait but may be modified and perhaps corrected by chemical means. This possibility is enhanced by the beneficial effects observed from the use of the nonsedative drug phenytoin sodium.

25 Shattuck Street.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

**CYCLOPROPANE** (See the Revised Supplement to N. N. R., 1941, p. 11).
The following product has been accepted:
E. R. SQUIBB & SONS, NEW YORK.
**Cyclopropane:** 30 gallon, 75 gallon and 200 gallon cylinders; 2 gallon, 6 gallon and 25 gallon Amplons.

**BARBITAL SODIUM** (See New and Nonofficial Remedies, 1941, p. 128).
The following dosage form has been accepted:
SCHERING & GLATZ, INC., NEW YORK.
**Elixir Medinal:** 6 ounce and 1 gallon bottles. A solution containing in each 4 cc. (1 teaspoon), 0.12 Gm. (2 grains) Medinal in 20% alcohol.

**NIKETHAMIDE** (See THE JOURNAL, March 28, 1942, p. 1052).
The following dosage forms have been accepted:
GEORGE A. BREON & CO., INC., KANSAS CITY, MO.
**Solution Nikethamide 25% W/V:** 0.375 Gm., 1½ cc. ampul; and 0.25 Gm., 3 ounce, 15 cc. and 1 pint bottles for oral use.

**SULFADIAZINE** (See THE JOURNAL, Feb. 28, 1942, p. 730).
The following brand has been accepted:
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.
**Sulfadiazine *(Powder):*** bulk.
**Tablets Sulfadiazine:** 0.5 Gm. (7.7 grains).

**SULFADIAZINE** (See THE JOURNAL, Feb. 28, 1942, p. 730).
The following dosage form has been accepted:
SHARP & DOHME, INC., PHILADELPHIA.
**Tablets Sulfadiazine:** 0.5 Gm.

**SODIUM SULFADIAZINE** (See THE JOURNAL, July 4, 1942, p. 794).
The following dosage form has been accepted:
SHARP & DOHME, INC., PHILADELPHIA.
**Sodium Sulfadiazine *(Sterile Powder):*** 5 Gm. vials.

**SULFATHIAZOLE** (See New and Nonofficial Remedies, 1941, p. 514).
The following dosage form has been accepted:
FREDERICK STEARNS & COMPANY, DETROIT.
**Tablets Sulfathiazole:** 0.5 Gm. (7.716 grains).

**PHENOBARBITAL** (See New and Nonofficial Remedies, 1941, p. 141).
The following dosage forms have been accepted:
GEORGE A. BREON & CO., INC., KANSAS CITY, MO.
**Tablets Phenobarbital:** ½ grain and 1½ grains.

## Council on Foods and Nutrition

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

FRANKLIN C. BING, Secretary.

### FRUIT JUICES INCLUDING TOMATO JUICE (*See* Accepted Foods, 1939, p. 49).

**Mission Dry Corporation, Los Angeles.**

MISSION BRAND CONCENTRATED CALIFORNIA ORANGE JUICE, an unpasteurized orange juice concentrate formed by evaporating California Valencia Orange Juice under reduced pressure to approximately 15 per cent of its original volume. Because this product receives no heat treatment it is distributed only to institutions in which it can be properly refrigerated.

*Analysis* (submitted by manufacturer).—Moisture 35%, total solids 65%, ash 2%, fat (ether extract) 0.6%, protein (N × 6.25) 4.6%, crude fiber 0.2%, available carbohydrate 48.4%, total solids as citric acid 5.3%.

*Calories.*—2.6 per gram; 78 per ounce.

*Vitamin Claims.*—Ascorbic acid (determined by 2,6 dichlorophenolindophenol titration) 293 mg. per hundred cubic centimeters. When diluted with 5.75 volumes of water as recommended, the resulting drink contains 44 mg. of ascorbic acid per hundred cubic centimeters, which closely approximates the reported values for fresh orange juice.

### MILK AND MILK PRODUCTS OTHER THAN BUTTER (*See* Accepted Foods, 1939, p. 230).

SOFT CURD MILK PRODUCED BY TREATMENT WITH PROTEOLYTIC ENZYMES.

It has been shown that milk which has been subjected for short periods of time to the action of proteolytic enzymes retains the physical properties of ordinary milk but uniformly produces a soft curd.[1] This effect has been attributed to a mild hydrolysis of the proteins of milk, a hydrolysis so mild that it can scarcely be detected by the chemical estimation of free amino groups. Turner found only slight increases in free amino groups as determined by the Van Slyke method but reported a significant increase in the alcohol soluble protein and some increase in the proteose peptone fraction.[2] This investigator has also shown that there may be a slight increase in the rate of digestion in vitro of the proteins of enzyme treated milk over the proteins of ordinary pasteurized milk.

ENZYLAC MILK.

Enzylac Powder, manufactured by The Armour Laboratories, Armour and Company, Chicago, is distributed by the American Seal-Kap Corporation, Long Island City, N. Y., to dairies desiring to use this process of producing soft curd milk, is manufactured under U. S. Patent Number 2115505 and consists of a trypsin preparation derived from defatted pancreatic glands of hogs and cattle. Twelve and six-tenths Gm. of the commercial Enzylac Powder is mixed with 100 gallons of cold milk, which with constant agitation is raised to a temperature of 100 to 120 F. for not more than fifteen minutes. The milk is then pasteurized, cooled, packaged in the usual manner and marketed under the name of Enzylac Milk.

Individual brands of pasteurized Enzylac Milk, with or without added vitamin D, are given consideration by the Council with a view to acceptance provided the submission of such products is accompanied by signed reports of curd tension tests. Claims for accepted products may not exceed the allowable claims for soft curd milks made by other methods[3] and must otherwise conform with the Rules and Decisions of the Council.

### PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

**Harold H. Clapp, Inc., Rochester, N. Y.**

CLAPP'S CEREAL FOOD FOR BABIES, a flaked, dried cooked mixture of ground whole wheat, degerminated corn meal, wheat germ, malt, dried skim milk, dried brewers' yeast, dicalcium phosphate, sodium chloride and iron ammonium citrate U. S. P.

*Analysis* (submitted by manufacturer).—Carbohydrate 71.7%, protein (N × 6.25) 16.0%, fat (ether extract) 1.2%, ash (total minerals) 3.8%, crude fiber 1.6%, moisture 5.7%, calcium (Ca) 0.34%, phosphorus (P) 0.80%, iron (Fe) 0.021%, copper (Cu) 0.002%.

*Calories.*—3.43 per gram; 97 per ounce.

*Vitamin Claims.*—According to the report of biologic assay (1941) submitted by the manufacturer, the product contains 0.01 mg. of thiamine per gram, 0.3 mg. per ounce, and 0.002 mg. of riboflavin per gram, 0.07 per ounce.

1. Conquest, V.; Turner, A. W., and Reynolds, H. J., J. Dairy Sc. **21**: 361, 1938.
2. Turner, A. W.: Proc. Soc. Exper. Biol. & Med. **46**: 393-395 (April) 1941.
3. The Nutritional Significance of the Curd Tension of Milk, J. A. M. A. **108**: 2040 (June 12), 2122 (June 19) 1937.

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SATURDAY, OCTOBER 10, 1942

## UTILIZATION OF CARBON DIOXIDE BY ANIMAL TISSUES

From the point of view of general physiology, Evans's summary [1] of the rapidly increasing evidence that carbon dioxide can be utilized by higher animal tissues represents an important fundamental advance in current nutritional theory. Certainly it throws doubt on the validity of certain accepted clinical diagnostic methods.

For decades a sharp differentiation has been made between plant and animal nutrition, based on their basic nutritional requirements. Plants, with their ability to use simple inorganic substances such as carbon dioxide, ammonia and water, have been placed in one category, sharply separated from animals, which apparently require more highly complex preformed dietary constituents. Experimentally it has been shown that the carbon requirements of higher plants can be satisfied completely by photosynthetic uptake of carbon dioxide. In animals carbon dioxide is traditionally regarded solely as a nonrecoverable metabolic end product.

The first serious break with this tradition dates from the demonstration by Wood and Werkman [2] of Iowa State College that certain saprophytic bacteria are able to utilize carbon dioxide as their sole source of carbon, under conditions that exclude the possibility of photosynthesis. Subsequently it was recognized [3] that in algae and in higher plants there are two methods of carbon dioxide utilization, a photosynthetic uptake ("light assimilation") and a nonphotogenic fixation, or carboxylation ("dark assimilation"). A hint that a similar nonphotogenic incorporation of carbon dioxide into organic molecules also occurs in animals came as a by-product to studies of carbohydrate metabolism. By the use of radioactive carbon dioxide, or the stable isotope of carbon, Wood and his co-workers,[4] for example, showed that the tagged carbon dioxide ($C^{13}O_2$) is incorporated anaerobically into malic, fumaric and succinic acid in minced pigeon muscle. Evans and Slotin [5] showed its similar incorporation into alpha-ketoglutaric acid and its presumptive incorporation into lactic acid. Under certain experimental conditions the uptake of ($C^{13}O_2$) by minced rat, pigeon or beef liver may equal 25 to 30 per cent of the total earmarked carbon dioxide originally added to the suspension fluid.

Afterward Solomon and his associates [6] of Harvard Medical School showed that a similar utilization of carbon dioxide takes place in intact animals. These investigators injected radioactive sodium bicarbonate into fasting rats and simultaneously fed the animals with sodium lactate. They found that a considerable part of the injected radioactive carbon appeared as new formed glycogen in the liver. Less than 60 per cent of the injected $C^{11}$ was accounted for in the respiration and other excretions, suggesting that over 40 per cent of the carbon dioxide was retained in organic combination in various tissues.

In order to determine the chemical nature of this tissue utilization of carbon dioxide, Evans and his associates [7] have begun a study of $C^{11}O_2$ uptake by cell free tissue extracts. In fresh aqueous extracts of minced pigeon liver there is an initial rapid utilization of $C^{11}O_2$, followed by its gradual release. This suggests that there are two different (or reversible) enzymic reactions involved, one bringing about a rapid assimilation of carbon dioxide, the other its slow release. In cell free phosphate buffer extracts of pulverized acetone dried pigeon liver, in contrast, there is a steady and constant increase in the carbon dioxide uptake, over 20 per cent of the inorganic $C^{11}$ being fixed as organic carbon by the end of sixty minutes' anaerobic incubation at 40 C. This suggests that the enzyme responsible for the terminal release of carbon dioxide is either absent or inhibited in this extract.

Thus far too little quantitative work has been done with intact animals to predict the magnitude of the error that nonrecognition of metabolic reutilization of carbon dioxide introduces in current clinical methods. If it can be shown that 10 per cent of the carbon dioxide nutritional end product is reutilized under certain conditions while the suggested 40 per cent is conserved under other conditions, a very appreciable error will be recognized. The work is of main interest at the present time, however, as exemplifying the radical revisions of traditional theories that may result from current studies of the physiology of "tagged" atoms and other "earmarked" chemical products. There is a wide range of clinical beliefs that conceivably will soon become obsolete.

1. Evans, E. A., Jr.: Science **96**: 25 (July 10) 1942.
2. Wood, H. G., and Werkman, C. H.: J. Bact. **30**: 332, 1935.
3. Ruben, S.; Kamen, M. D., and others: J. Am. Chem. Soc. **62**: 3443, 3450, 3451, 1940.
4. Wood, H. G.; Werkman, C. H.; Hemingway, Allen, and Nier, A. O.: J. Biol. Chem. **135**: 789 (Sept.) 1940; **139**: 365, 377 (May) 1941; **142**: 31 (Jan.) 1942.
5. Evans, E. A., Jr., and Slotin, Louis: J. Biol. Chem. **136**: 301 (Oct.) 1940.
6. Solomon, A. K.; Vennesland, Birgit; Klemperer, F. W.; Buchanan, J. M., and Hastings, A. B.: J. Biol. Chem. **140**: 171 (July) 1941.
7. Evans, E. A., Jr.; Slotin, Louis and Vennesland, Birgit: J. Biol. Chem. **143**: 565 (April) 1942.

## PROTEIN DEFICIENCY

For several decades it has been known that animals placed on a diet deficient in protein develop a hypoproteinemia. Weech and his associates [1] of Columbia University, for example, showed that the decrease in serum protein is almost exclusively in the albumin fraction, the serum globulin remaining practically constant. It had been previously suggested by Holman and others [2] that there is a "dynamic equilibrium between tissue protein and plasma protein," though no serious attempts were made to determine the mathematical laws governing the presumptive intracellular-extracellular protein interchange.

During the course of extensive nutritional experiments, Sachar and others [3] at Washington University, St. Louis, obtained evidence in support of this assumed constant physicochemical balance. In a series of dogs maintained for three weeks on a protein free diet, for example, there was a fall in total serum albumin, calculated from the fall in albumin concentration multiplied by the total blood volume. The accompanying loss of fixed tissue protein was calculated from the total urinary and fecal loss of nitrogen, 1 unit of nitrogen being equivalent to 6.25 units of protein. In their first group of protein starved dogs there was a constant ratio between the total serum albumin loss and the fixed tissue protein depletion. For example, the average loss of total serum albumin was 5.28 Gm., with an average total body depletion of 176 Gm. This is a 30:1 ratio between tissue depletion and serum loss. The available data in the clinical literature suggest that the same mathematical relationship holds for man.

The practical therapy of dietary protein deficiency has been studied by numerous investigators. Weech,[4] for example, found a definite regeneration (in the following order of efficacy) when beef serum, egg white, meat, liver or casein was added to canine deficiency diet. After three weeks' protein starvation a supplementary diet of 5 Gm. per kilogram daily of beef chuck led to an almost complete return to normal within ten days. This is equivalent to approximately 1 pound of beefsteak daily for the average human adult. In order to determine the maximum rapidity of such regeneration, the St. Louis surgeons [5] allowed a group of dogs starved of protein for three weeks to eat raw lean horse meat ad libitum over a two weeks period. The amount of meat voluntarily consumed by these dogs was surprisingly large, averaging 250 Gm. per kilogram daily, each dog consuming each day approximately one fourth of its total body weight. This would be equivalent to 12½ pounds of beefsteak three times a day for the average human adult.

This massive protein diet resulted in a complete regeneration of both concentration and total amount of serum albumin within one week. The total circulating serum albumin increased well above normal, mainly as a reflection of the increased plasma volume. The changes in body weight were roughly parallel with the changes in total serum albumin. There was little further increase in total serum albumin during the second week. The serum globulin, which remained unchanged during the first week, however, showed a distinct increase during the second week. The red cell volume fell during the regeneration period, presumably as a reflection of the increased total blood volume.

The St. Louis surgeons conclude that the 30:1 partitive coefficient between total tissue protein and serum albumin makes the use of human plasma or serum transfusion altogether unpractical in clinical cases, at least in severely depleted patients. They are of the opinion that the most promising therapeutic approach at the present time is by the use of hydrolyzed proteins of "high biologic value." [6]

### MORE YOUNG PHYSICIANS FOR THE ARMY

**Under Medicine and the War in this issue of The Journal appears a statement authorized by the Office of the Surgeon General relative to the recruitment of physicians for the Medical Department of the Army. The points made in that statement may be succinctly stated as follows:**

**1. Doctors who volunteered in 1940 and early in 1941 must be promoted, so that doctors who volunteer now should not expect initial appointments in the higher grades.**

**2. Active recruitment must continue to keep pace with the needs of the armed forces. Doctors declared available by the Procurement and Assignment Service are now being directly recruited by the Medical Corps.**

**3. Young physicians are most needed. In many places they seem to be reluctant to enroll. The Surgeon General requests older physicians to urge enrolment of these younger men.**

**4. The official way to volunteer is application on the regular War Department forms. No other method of volunteering is official.**

**5. Every effort is being made to assign men with special training to the work for which they are best fitted.**

**6. Read particularly the five paragraphs under the heading "Some Don'ts." Cooperation will aid efficiency necessary to win the war.**

1. Weech, A. A.; Goettsch, Emil, and Reeves, E. B.: Nutritional Edema in the Dog, J. Exper. Med. **61**: 299 (March) 1935.
2. Holman, R. L.; Mahoney, E. B., and Whipple, G. H.: Blood Plasma Protein Given by Vein Utilized in Body Metabolism, J. Exper. Med. **59**: 269 (March) 1934.
3. Sachar, L. A.; Horvitz, Abraham, and Elman, Robert: Studies on Hypoalbuminuria Produced by Protein Deficient Diets, J. Exper. Med. **75**: 453 (April) 1942.
4. Weech, A. A.: Harvey Lectures **34**: 59, 1938-1939.
5. Elman, Robert; Brown, F. A., Jr., and Wolf, Harriet: J. Exper. Med. **75**: 461 (April) 1942.
6. Elman, Robert: Ann. Surg. **112**: 594 (Oct.) 1940.

# Current Comment

## FUEL OIL RATIONING

Under correspondence in this issue of THE JOURNAL, page 472, appears a letter from Joel Dean, director of the Fuel Rationing Division of the Office of Price Administration, relative to aspects of this subject which especially concern the physician. Illness, old age or infancy may make necessary auxiliary rationing of oil; consumers may obtain such auxiliary rations by applying to the local rationing board, accompanying the application with a certificate from a licensed physician. In supplying such a certificate the physician is to give the date, the name and the address of the householder. Furthermore, he must certify the nature of the illness, whether acute or chronic, whether or not it is of the type requiring higher indoor temperature, the approximate temperature required and the approximate period for which the supplemental base heat is needed. The physician may at his discretion state the nature of the illness or may give additional information that will be helpful. The applicant himself files the certificate with the local rationing board. Furthermore, as a check, advisory committees are to be set up for each local rationing board. These advisory committees will include two licensed physicians and the county or local health officer. They will review cases in which certificates are questioned or in which a professional opinion is desired. Thus comes to the medical profession another call for its special services in wartime. Civilian physicians will no doubt do their utmost to aid in this work as another contribution to the war effort.

## PNEUMONIA DEATH RATE DECLINING

The decline in the pneumonia death rate from 202.2 per hundred thousand in 1900 to 70.3 in 1940, reported by the federal Bureau of Census, is by no means as glowing as the results in the last two years entitle us to expect. This statement by Dr. Louis I. Dublin of the Metropolitan Life Insurance Company lends emphasis to the realization that the use of sulfonamide derivatives and other modern treatments have greatly accelerated the decline of the influenza and pneumonia death rate in the past two years and that we may expect even greater diminution. For the first seven months of 1942 the death rate of the Metropolitan Insurance Company's industrial policyholders from influenza and pneumonia was 28 per cent below the corresponding period of 1940. Dr. Dublin says:

> How remarkable this drop in mortality really is can only be realized by thinking in terms of the decline per year over the four decades from 1900 to 1940, and the corresponding annual figures for the last two years.
>
> For the general population, the decline in influenza and pneumonia mortality has been at a rate of 1.5 per cent a year in the four decades. Among the insured wage earners and their families the rate of decline in the last two years has been more than 14 per cent a year. And much the same results will probably be found to have occurred in the general population when the mortality figures become available. Indeed, if the present trend continues for a few more years, pneumonia, which only a decade ago was a scourge, will have become a minor cause of death.

## THE HUMORAL CONTROL OF INTERNAL SECRETION

Probably the most direct evidence for the humoral control of endocrine secretion so far reported is that presented by Patt and his co-workers.[1] Three types of experiments for testing the response of the parathyroid glands to low serum calcium were undertaken. First, small dogs were alternately bled maximally and immediately transfused with an equal volume of decalcified blood. By this means the total serum calcium was decreased to 5.5 to 7 mg. per hundred cubic centimeters after about fourteen transfusions. Twenty minutes after the last transfusion the serum calcium rose 1 to 2 mg. in both the normal dogs and in dogs thyroparathyroidectomized just prior to the experiment, and no further rise in serum calcium was observed. These experiments were performed on 7 normal and 3 thyroparathyroidectomized dogs. Second, large amounts of sodium oxalate were injected intravenously into both normal dogs and dogs thyroparathyroidectomized just prior to the oxalate injections. In both groups of animals the serum calcium fell immediately to 5.5 to 7 mg. per hundred cubic centimeters but rose promptly in the intact dogs and returned to the normal level within one and one-half to three and one-half hours. Only a slight rise in serum calcium (1 to 2 mg. per hundred cubic centimeters) occurred in dogs deprived of their parathyroid glands, nor was any rise noted during a subsequent seven hour period. In this series 5 normal and 4 parathyroprival animals were used. The most direct evidence was secured in a third series of experiments in which the thyroid-parathyroid gland in a dog was isolated from the systemic circulation, only the superior thyroid artery and the internal jugular vein being left open. These vessels were cannulated. Decalcified heparinized blood was perfused through the gland for two hours at a rate of approximately 3 to 4 cc. per minute. The plasma of this perfusate was then injected intravenously into a normal dog under soluble barbital anesthesia. A rise in serum calcium of from 1.6 to 4.5 mg. occurred one and one-half to three hours later. The calcium returned to normal in four and one-half to seven hours in 4 of the dogs but remained elevated in 3 dogs seven hours after the injection. When normal heparinized blood was perfused through the thyroid-parathyroid apparatus, the collected perfusate on intravenous injection did not yield any significant change in serum calcium. In this last series of experiments serum phosphorus values were also determined, but the changes observed were not considered significant since urinary phosphorus values were not followed simultaneously. Eleven such experiments involving the perfusion of both decalcified and normal blood were carried out. These preliminary investigations are considered by the authors to indicate a humoral control (low blood calcium) of the parathyroid glands. Such humoral control of endocrine secretion is suggestive of the homeostatic mechanism for the regulation of the blood sugar by the liver, as reported by Soskin and his co-workers [2] in 1938, and marks an important step in the understanding of the mechanism by which physiologic change is controlled.

1. Patt, Harvey M.; Wallerstein, Elizabeth, and Luckhardt, Arno B.: A Humoral Control of Parathyroid Secretion, Proc. Soc. Exper. Biol. & Med. **49**: 580, 1942.

2. Soskin, Samuel; Essex, H. E.; Herrick, J. F., and Mann, F. C.: The Mechanism of Regulation of the Blood Sugar by the Liver, Am. J. Physiol. **124**: 558 (Nov.) 1938.

# MEDICINE AND THE WAR

***In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.***

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

## THE NEED OF THE ARMY FOR PHYSICIANS

The office of the Surgeon General, United States Army, Washington, D. C., has requested publication in THE JOURNAL of the following statement:

### RANK ON INITIAL APPOINTMENT

The Surgeon General realizes that physicians of our country are being asked to make individual and collective sacrifices incomparably greater than those of other professional groups. Original appointments in higher grades, no matter how desirable, cannot be recommended for all physicians in order to compensate them for their sacrifices which must be faced, both on a financial and on a familial basis. The physician must accept these sacrifices with his heritage of altruistic devotion to suffering humanity, which is universally anticipated. In justice, however, to those medical officers who accepted in peacetime their obligation of service to our country, and who during the long months since August 1940 have made possible an adequate medical service for our ever increasing army, initial appointments of new officers in grades to which qualified officers already in service should be promoted must necessarily be restricted.

### RECRUITMENT MUST CONTINUE

The response of the medical profession to the Army's request for medical officers has been most gratifying. However, active recruitment throughout 1943 will be necessary to keep pace with the accelerated mobilization rate.

The Procurement and Assignment Service of the War Manpower Commission has furnished a tremendous aid in the procurement of applicants and in furnishing necessary information regarding their professional qualifications and availability for military service. Recently this service has furnished the Surgeon General with names of qualified, eligible physicians who have signified their desire to enter the Medical Department and are not considered essential to the health and safety of the civilian community. These physicians are being requested, either directly or through the medical officer recruiting boards in various states, to make application for appointment in the Medical Corps.

### YOUNG MEN MOST NEEDED

In regard to this, it must be borne in mind that acceptance by the armed forces of applicants above Selective Service age tends to create in civil communities a shortage of doctors. This may result in deferment of younger men whose prerogative it is to serve. Young physicians must be procured for assignment to duty with combat troops, both of the army ground forces and of the army air forces. Of vital interest is the fact that a relatively small percentage of recent graduates in medicine who completed one year of internship have accepted the responsibilities of military service. This group of physicians, and those slightly older, are the ones on whose shoulders the responsibilities for adequate military care must fall. The Surgeon General urges the physicians who served in the first world war, who so loyally offer their services in the present emergency, to utilize their prestige and influence to persuade the younger men to accept their responsibility in the national war effort, as the physicians of 1917 and 1918 accepted theirs.

### HOW TO VOLUNTEER

From correspondence received in the Office of the Surgeon General, it is apparent that many unanswered questions should be explained. To help clear this maze of doubt, a few questions will be answered and clarified in the following paragraphs.

First, have you volunteered? Only if the following conditions have been fulfilled:

1. If you have filled out application blanks at a medical officers recruiting board and have had a final type physical examination at an army installation.

2. If you have filled out these blanks and sent them to the Office of the Surgeon General, with the report of your physical examination.

3. If you are already in the service.

A personal letter written to the Surgeon General applying for duty is not sufficient; neither is the completion and return of questionnaires such as those distributed by the Procurement and Assignment Service of the War Manpower Commission sufficient. You must apply on regular War Department forms to the Surgeon General directly or through the medical officers recruiting board before you have volunteered your services. The latter is preferable (application through the medical officers recruiting board), for it allows completion of the essential papers more rapidly than can otherwise be accomplished. So, contact your board. Physicians who are designated by the Procurement and Assignment Service as "essential" for civilian medical services cannot be commissioned and should not initiate applications for commissions.

### ASSIGNMENT TO SPECIAL SERVICES

What kind of work will you do?

A sincere effort is being made by this office to place men in the same type of work for which they received training in their civilian medical practice. The papers of every officer appointed are examined carefully before assignments are made. Those individuals who have had special training in any field of medicine can best serve

their country doing that work. We are hoping not to have ophthalmologists doing amputations of extremities. We do not wish to have general surgeons as chiefs of radiology departments. It will be impossible to classify every individual properly, but at the present time the vast majority of men are being placed as their training indicates, by automatic processes in the Surgeon General's office. Therefore you, if a specialist, can be assured that every effort will be made to continue you in an assignment in keeping with your training and experience. This will keep the level of military medicine on a high plane and at the same time further the education of the individual concerned and increase the standards of medical care for the soldiers in the front lines.

SOME DON'TS

To help the Surgeon General, please observe the following:

1. Do not come to Washington to talk to officers engaged in this work. Your presence slows the call to active duty of many men.

2. Do not try to influence this office by the writing of letters to influential individuals in other government services. Their time is already engaged in functions essential to successful completion of our war effort.

3. Do not send in duplicate applications. This results in much confusion in all War Department offices concerned in the calling to duty of qualified physicians.

4. Do not write for information unless it is absolutely essential and of an emergency nature. Many letters are answered daily which, on proper consideration, should never have been written; or the answers could have been given by medical officers recruiting boards.

5. The action of the grading committee appointed in this office in determining the initial grade must be final. The decision is reached only after careful consideration of many factors which must be taken into account and cannot possibly be understood by one not in the military service.

NOW IS THE TIME TO VOLUNTEER!

Our army is a young army. It needs young doctors—doctors of troop age, 45 years or younger—men who can work in the field hospitals, mobile hospitals and other medical installations. Doctors above this age should take care of civilian medical needs, a necessary patriotic service, unless a position vacancy awaits them in military service. The patriotic spirit of our country is, and must continue to be, reflected in the response of our doctors to this call to arms.

If you are in the age group needed, complete your application.

Your Army needs you!

Your Nation awaits your action!

## PLANS TO MEET NEED FOR MEDICAL CARE

Plans for meeting the need for medical care in communities where a shortage of physicians has developed are being made now by the U. S. Public Health Service and the Procurement and Assignment Service of the War Manpower Commission, Paul V. McNutt, chairman of the War Manpower Commission, announced, September 22. He added that the two services are cooperating closely in the planning of this emergency action.

Mr. McNutt explained that in many areas an acute need for medical service has arisen as a result of extraordinary increases in population brought about by expansion of war industries or other war activities. In other areas there is shortage of medical service resulting from the entry of physicians into the armed forces.

Distributed throughout the industrial areas of the country are more than three hundred communities in which the lack of medical care is being felt. The chairman pointed out that among the most critical of these localities are Baltimore County (around Glenn L. Martin Company); Valparaiso, Fla.; Huntsville, Ala.; Childersburg, Ala.; LaPorte, Ind.; Charleston, Ind.; Fort Knox, Ky.; Rantoul, Ill.; Texarkana area; Bremerton, Wash.; Pryor-Choteau, Okla.; Vallejo, Calif.; Velasco, Texas; Waynesville, Mo.; Wichita Falls, Texas, and Norfolk, Va.

Mr. McNutt also announced his approval of a statement of policy adopted by the directing board of the Procurement and Assignment Service in which the Procurement and Assignment Service accepts the responsibility of ascertaining the needs of the civilian population for medical service and providing the medical personnel to meet them.

The principles set forth in this policy statement, Mr. McNutt said, were developed in cooperation with the federal officials concerned and have the approval of the Surgeon General of the United States Public Health Service. The statement has been approved by the boards of trustees of the American Medical Association, the American Dental Association and the war service committees of the two associations, and the executive committee representing the State and Territorial Health Officers Association.

Following are the principles recommended by the directing board of the Procurement and Assignment Service for meeting the emergency needs:

1. That it is a responsibility of the Procurement and Assignment Service to ascertain the needs of the civilian population—nonmilitary—for medical service.

2. That it is the responsibility of the Procurement and Assignment Service to aid in providing the medical personnel to meet these needs.

3. That, as now constituted, the Procurement and Assignment Service is not in a position to deal with the financial and administrative problems involved in the provision of medical care.

4. That as far as possible these problems should be met at the state level in view of the many different types of problems and needs and the relation of these and their solution to local situations.

5. That a survey of these needs should be made by the existing committees of the Procurement and Assignment Service with the aid of such technical assistance as may be necessary. It is especially desirable that in determining these needs the state procurement and assignment committee seek the cooperation of the state health department, of the state medical society and of the state dental society, of industry, of organized labor and of other agencies, such as the state defense council, which should be able to make significant contributions to the solution of this problem.

6. That whenever possible the civilian needs as determined by these committees should be met through local arrangements, resources and agencies. In case assistance is needed for the organization, administration or financing of necessary medical or dental services in these areas, the responsibility should devolve on an agency which should include representatives of the state health department, the state medical society and the state dental society, with the cooperation and support—financial and technical—of the appropriate federal agencies, the administration of funds being delegated to the appropriate state agency.

7. That, since these problems have been occasioned by the war and in many instances transcend state lines, the federal government has a definite responsibility to cooperate with the states in meeting these needs by the provision, when necessary, of financial and technical assistance.

8. That the needs for medical care in certain areas are so acute and the pressure from various sources so great that it is imperative to have prompt action for implementation of this program. It appears to the directing board that the responsibility for the initiation of such action rests with the War Manpower Commission.

## STATE MEDICAL CHAIRMEN FOR PROCUREMENT AND ASSIGNMENT SERVICE

Alabama—Dr. B. F. Austin, 519 Dexter Avenue, Montgomery.
Arizona—Dr. Charles S. Smith, Nogales.
Arkansas—Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith.
California: North—Dr. Harold A. Fletcher, Room 1433, 450 Sutter Street, San Francisco. South—Dr. Edward M. Pallette, 1930 Wilshire Blvd., Los Angeles.
Colorado—Dr. John Amesse, 624 Metropolitan Bldg., Denver.
Connecticut—Dr. Creighton Barker, 258 Church Street, New Haven.
Delaware—Dr. William H. Speer, 917 Washington Street, Wilmington.
District of Columbia—Dr. F. X. McGovern, 1718, M Street N.W., Washington.
Florida—Dr. Edward Jelks, Box 1018, Jacksonville.
Georgia—Dr. W. A. Selman, 157 Forrest Avenue N.E., Atlanta.
Idaho—Dr. F. M. Cole, Caldwell.
Illinois—Dr. Ralph A. Kordeaut, 6 North Michigan Avenue, Chicago; Dr. Harold M. Camp, 224 South Main Street, Monmouth.
Indiana—Dr. Charles R. Bird, 23 East Ohio Street, Indianapolis.
Iowa—Dr. T. F. Suchomel, 305 Second Street, Cedar Rapids.
Kansas—Dr. F. L. Loveland, 109 West 9th Street, Topeka.
Kentucky—Dr. A. T. McCormack, 620 S. Third Street, Louisville.
Louisiana—Dr. C. Grenes Cole, 921 Canal Street, New Orleans.
Maine—Dr. John G. Towne, 31 Western Avenue, Augusta.
Maryland—Dr. Charles W. Maxson, 29 S. Greene Street, Baltimore.
Massachusetts—Dr. Reginald Fitz, 319 Longwood Avenue, Boston.
Michigan—Dr. P. R. Urmston, 2014 Olds Tower, Lansing.
Minnesota—Dr. William F. Braasch, 102 Second Street, Rochester.
Mississippi—Dr. T. M. Dye, Box 293, Clarksdale.
Missouri—Dr. Robert Mueller, 3115 South Grand Ave., St. Louis.
Montana—Dr. Herbert Caraway, 113 North 28th Street, Billings.
Nebraska—Dr. A. A. Conrad, 416 Federal Security Bldg., Lincoln.
Nevada—Dr. C. W. West, 120 N. Virginia Street, Reno.
New Hampshire—Dr. Deering G. Smith, 77 Main Street, Nashua.
New Jersey—Dr. C. H. Schlichter, 31 Clinton Street, Newark.
New Mexico—Dr. L. B. Cohenour, 221 Central Avenue, Albuquerque.
New York—Dr. Donald F. Childs, Medical Arts Building, Syracuse; Dr. Joe R. Clemmons, 292 Madison Street, New York.
North Carolina—Dr. Hubert B. Haywood, 127 W. Hargett Street, Raleigh.
North Dakota—Dr. L. W. Larson, 221 5th Street, Bismarck.
Ohio—Dr. Robert Conard, 1005 Hartman Theater Bldg., Columbus.
Oklahoma—Dr. W. W. Rucks, 301 N. W. 12th Street, Oklahoma City.
Oregon—Dr. Wilson Johnston, 1020 S. W. Taylor St., Portland.
Pennsylvania—Dr. C. H. Henninger, 500 Penn Avenue, Pittsburgh; Dr. W. L. Estes Jr., 314 W. 4th Street, Bethlehem.
Rhode Island—Dr. Halsey DeWolf, 305 Brook Street, Providence.
South Carolina—Dr. W. L. Pressley, Due West.
South Dakota—Dr. William Duncan, Webster.
Tennessee—Dr. W. C. Dixon, 706 Church Street, Nashville.
Texas—Dr. Holman Taylor, 1404 West El Paso St., Fort Worth.
Utah—Dr. A. C. Callister, 54 E. So. Temple St., Salt Lake City.
Vermont—Dr. Benjamin F. Cook, 46 Nichols Street, Rutland.
Virginia—Dr. Hugh H. Trout, 1301 Franklin Road, Roanoke.
Washington—Dr. Raymond Zech, 509 Olive Way, Seattle.
West Virginia—Dr. Robert K. Buford, 1031 Quarrier Street, Charleston.
Wisconsin—Dr. R. E. Fitzgerald, 2750 N. Teutonia Ave., Milwaukee.
Wyoming—Dr. George H. Phelps, 1606 Capitol Ave., Cheyenne.

# WAR NEWS

## HEALTH, SAFETY AND TECHNICAL SUPPLIES BRANCH

The Safety and Technical Equipment Branch has been consolidated with the Health Supplies Branch, the War Production Board announced, October 3. The new combined branch will be known as the Health, Safety and Technical Supplies Branch. Francis M. Shields, formerly chief of the Health Supplies Branch, is chief of the combined branch. Mr. Shields, before coming to the War Production Board, was vice president of the American Optical Company.

George W. Angell, formerly deputy chief of the Safety and Technical Equipment Branch, has been named Deputy Chief under Mr. Shields.

The Health, Safety and Technical Supplies Branch will embrace the following sections, each under the same section chief who headed it previously to its transfer to the newly created branch: Surgical Instruments Section, headed by James H. Burton; Orthopedic and Dental Section, Howard Pringle; X-Ray Section, R. K. Myers; Safety and Equipment Section, Harold C. Mesch; Fire Equipment Section, H. Mahlon Foley; Technical and Scientific Equipment Section, W. C. Stevenson.

## GOVERNMENT PLACES RECORD ORDER FOR ATABRINE

Dr. Theodore G. Klumpp, president of Winthrop Chemical Company, disclosed on September 24 receipt from the U. S. Army of the largest single order for atabrine, synthetic substitute for quinine, on record. At the same time he revealed that production of atabrine in this country was now in excess of 500 million tablets a year and was rapidly approaching a rate of 600 million tablets a year.

It was announced also that the price of atabrine has been reduced to a new low of $4.50 per thousand tablets. "The new price to the government," Dr. Klump said, "reflects both recent increases in government orders and improvements in the manufacturing process. The $4.50 price to the government compares with the former low of $6 per thousand tablets and with $66.66 in 1933, when atabrine was first introduced to the American medical profession. At the new low price it costs about as much to treat a case of malaria with atabrine as to send an airmail letter. Actually the cost of medication with atabrine is 6¼ cents per case, as compared with 27 cents for quinine."

## VANDERBILT HOSPITAL UNIT ACTIVATED

The Vanderbilt University School of Medicine (Nashville) Unit, the 300th U. S. Army General Hospital, has been activated at Camp Forrest, Tenn. Lieut. Col. George W. Reyer, M. C., U. S. Army, is the commanding officer and Major James A. Kirtley Jr. is the unit director. Following are the other members of the staff:

### SURGICAL SERVICE

Major James Addison Kirtley Jr., Chief of Surgical Service.
Major Spencer Allen Collom Jr.
Major Charles Fowler Hollabaugh.
Major James Andrew Mayer.
Major Francis Murphey.
Major John Lyle Shaw.
Major Charles Clay Trabue IV.
Major Harwell Wilson.
Capt. Ralph John Angelucci.
Capt. Wilbur Kinsey Brubaker.
Capt. Frank Wooldridge Buckner.
Capt. Henry Murfree Carney.
Capt. Richard Redd Crutcher.
Capt. Dennis Bryan Fox.
Capt. Ben Hagan Marshall.
Capt. Edward Frost Parker.
Capt. George Edgar Pryor.
Capt. Louis Rosenfeld.

### MEDICAL SERVICE

Major Perry Davis Priest, Chief of Medical Service.
Major Arthur Bever Barrett.
Major Clarence Lucas Garner.
Major John Faulkner Rainey.
Capt. John William Allgood.
Capt. Robert Chambliss Berson.
Capt. Robert Norman Buchanan.
Capt. Joseph Russell Cook.
Capt. Robert Mark Finks.
Capt. Wiley Lewis Forman.
Capt. Joseph Wilson Johnson Jr.
Capt. Malcolm Judd Mann.
Capt. John Christian Ransmeier.
1st Lieut. Robert Decker Beech.
1st Lieut. Thomas Alison Donnell.
1st Lieut. Benjamin Perry Folk.
1st Lieut. Laurence Abraham Grossman.
1st Lieut. Herman Levinson.
1st Lieut. Hugh Harrison Mills.
1st Lieut. Richard Winston Blumberg.

### DENTAL SERVICE

Capt. Thomas Joseph Dowling, Chief of Dental Service.
Capt. George Wheeler Matthews.
Capt. James Benton Neil.
1st Lieut. Sifford Carmack Garvin.

### LABORATORY SERVICE

Capt. David King Gotwald, Chief of Laboratory Service.
1st Lieut. Beverly Todd Towery.

### X-RAY SERVICE

Capt. John MacDougall, Chief of X-Ray Service.
1st Lieut. Ben Richardson Mayes.

### MEDICAL ADMINISTRATIVE

Major John Sims Crutcher Jr.
Major Robert Knox Galloway.
1st Lieut. Holger Kermit Brask.
1st Lieut. Garth Fort.
1st Lieut. Thomas Shadrack Weaver.

# ORGANIZATION SECTION

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Changes in Status.*—Public hearings are being held by a subcommittee of the House Committee on Education on H. R. 7484, a bill providing for the vocational rehabilitation of individuals suffering from war connected or other disabilities. The conference report on H. R. 7164, to amend the Soldiers' and Sailors' Civil Relief Act of 1940, has been agreed to by the House and Senate. The bill retains the provision authorizing the cancellation of leases on premises occupied for professional and certain other purposes. S. 2676 has been reported to the House, providing for medical care and funeral expenses for members of the Naval Reserve Officers' Training Corps who suffer disability from personal injury, illness or disease occurring in line of duty.

*Bills Introduced.*—S. 2814, introduced by Senator Walsh, Massachusetts, for himself and Senator Clark of Missouri, and H. R. 7618, introduced by Representative Rankin, Mississippi, provide for the rehabilitation in civil employment of persons disabled in the active military or naval service in the present war. H. R. 7614, introduced by Representative Eberharter, and H. R. 7622, introduced by Representative Weiss, both of Pennsylvania, propose to increase the annual base pay of female nurses of the Army and Navy to $1,800.

### DISTRICT OF COLUMBIA

*Change in Status.*—S. 2804 has been reported to the Senate, a bill to define the real property exempt from taxation in the District of Columbia. Among other things this bill exempts from taxation hospital buildings belonging to and operated by organizations which are not organized or operated for private gain, including buildings and structures reasonably necessary and usual to the operation of a hospital.

## MEDICAL ECONOMIC ABSTRACTS

### MEDICAL PLANNING IN GREAT BRITAIN

The Medical Planning Commission, established by the British Medical Association with the cooperation of the Royal Colleges and the Royal Scottish Corporations in August 1940, has submitted a draft interim report to the recent meeting of the British Medical Association.[1]

After discussing the defects of the present medical services, the commission sets forth some of the principles by which the discussions have been guided:

> What steps should be taken in the public interest to improve the community's medical services as a whole? Any proposals for reform must have as their object the largest possible measure of improvement in the public health. They must aim at improvement in the quantity, the quality and the availability of all types of medical service. Doctors must be competent and have time to devote to those medical services which they undertake to give. They must have facilities for rendering them at the highest possible level of efficiency. The public must have access to all services with the maximum amount of convenience and comfort.
>
> The reform of the medical and health services of the country should include measures for securing that each family or individual shall be under the care of a medical practitioner who shall be concerned not only with diagnosis and treatment but also with the promotion of health and the prevention of disease. This involves the integration of the preventive and personal health services. It also involves radical changes in the country's administrative machinery and in the training of medical students. It assumes that the fusion of public health and other forms of practice will result in practitioners in every field working in closer contact and accord not only with one another but also with dentists, nurses, midwives, sanitary inspectors and other auxiliaries.

The organization of all hospital services on a regional basis is generally favored, but there is division of opinion as to the action to be taken with regard to medical services. Some would favor an evolutionary development of existing services, with an expansion and improvement of the system of health insurance, supplemented by the creation of health centers to provide better facilities for consultation and diagnosis.

Another group desires a whole time salaried medical service organized locally through a system of health centers so placed and staffed as to meet the needs of the population, linked with the hospitals and all specialist services. Opponents of this plan "fear the intrusion of politics, both national and local, into the field of medical service, an intrusion which they maintain would be disastrous. They hold, further, that the 'cold hand' of bureaucratic control, with the doctor acting under the orders of superior officers, whether medical or lay, would be inimical to the wise and humane administration of a personal health service. The free lance doctor turned civil servant, they say, would suffer a diminution of his sense of personal responsibility for his patient and he would lose the spur to improved professional work and research. A profession of routine 'safe men' would be to the detriment of the country's health, and medicine might cease to attract the proportion of first class men it has attracted hitherto."

An intermediate group "are yet not prepared to go so far as to recommend a whole time salaried medical service. They therefore suggest a service intermediate between the two which would be based primarily on part time salaried public service with opportunities for private practice. The following outline may be taken as a typical intermediate scheme. Domiciliary medical service for persons with incomes below a certain level, with their dependents, would be free; persons whose income is above the standard 'free' level but below another standard figure would have the option of 'contracting in' to the service by making payments at regular intervals to a contributory scheme. The young practitioner entering general practice would act as assistant and receive a salary. The salary of the principal would depend upon the number of 'public' patients allocated to him, and this in turn would be dependent inversely upon the number of his private patients. The scheme also provides for the appointment of district medical officers with supervisory and consultative functions. An ad hoc regional council composed of full time salaried representatives of local authority hospitals and the local profession would be responsible directly to the central authority for the proper functioning of the domiciliary medical service in its area. The cost of the service would be a direct charge on the exchequer."

The majority is against a whole time salaried government service and feels that it is impossible to "start with a clean slate." The plan which is submitted for discussion would give the medical profession a greater influence in the local administrative bodies than exists in the present organization of medical services. It would encourage the development of group medical centers but would not make such institutions compulsory. Greater opportunity would be given to practitioners in the hospitals to acquire both clinical and administrative skill. Specialist and consultant services would be made more readily available. As few restrictions as possible would be placed on free choice. Special attention and provisions should be made for industrial service. The report concludes with list of points on which it asks for general discussion by the profession.

1. Brit. M. J. 1:743 (June 20) 1942.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ARKANSAS

**Personal.**—Dr. Doris L. A. Baldridge, Conway, has been appointed health director of Faulkner County.——Dr. Arthur C. Curtis, State Sanatorium, has been appointed director of the division of tuberculosis control of the Arkansas State Board of Health.——Dr. John R. Kitley has been reelected mayor of Mayflower for the seventeenth term.

**District Meeting.**—The Tenth Councilor District Medical Society was addressed in Fort Smith, September 24, by Major Warner F. Bowers on "Traumatic Chest Surgery"; Major Farris D. Evans, "Traumatic Abdominal Surgery"; Capt. David I. Schwartz, "Management of Compound Fractures," and Lieut. Norman F. Richard, "Nature and Treatment of Shock." All are of Camp Chaffee. The district society is composed of Benton, Washington, Crawford, Sebastian, Scott, Madison, Franklin, Johnson and Logan counties.

## CALIFORNIA

**Criminal Action Filed Against Impostor Phillips.**—J. W. Williams, San Francisco, representing the state board of medical examiners, has filed a criminal action in the court of Justice Gildersleeve at Fort Bragg against "J. H. Phillips," charging Phillips with unlawful practice and attempt to practice a system and mode of treatment in violation of the business and professional code of the state of California, newspapers reported on September 3. Arthur Osborne Phillips, alias "Dr. James Herman Phillips," is now said to be serving a term in the Butte County jail at Chico, having been found guilty of a charge of possessing a concealed weapon. His sentence on this charge is running concurrently with a six month sentence imposed after conviction on charges of practicing medicine without a license, it was reported. The new complaint will not be pressed until Phillips is at liberty. On May 26 he was charged with impersonating a surgeon and performing operations without a license in the Enloe Hospital in Chico, where he served temporarily as chief resident and chief assistant surgeon. Despite his claims prior to conviction, Phillips never graduated from a medical school. His diploma was obtained under a false affidavit and his confession admitted that he was an ex-convict. A complete record of Phillips's activities, which was published in THE JOURNAL, September 12, page 145, indicates that he served sentences for practicing medicine without a license in Alabama and Idaho. He served sentences on other charges in Ohio, Georgia, Pennsylvania and Maryland.

## COLORADO

**Personal.**—Dr. Robert K. Dixon, Denver, has been appointed a member of the state board of medical examiners to succeed Dr. George R. Buck, who entered the U. S. Navy Medical Corps. Dr. John B. Davis, Denver, is the secretary-treasurer of the board.

**Society News.**—The Arapahoe County Medical Society was addressed recently in Englewood by Robert A. Downs, D.D.S., director of the subdivision of dental health of the state division of public health, Denver, on "Control of Dental Caries."——A symposium on alcohol was presented before the Medical Society of the City and County of Denver by Drs. Philip Work, John P. Hilton and Bradford J. Murphey, August 4, all of Denver. Dr. Ora L. Huddleston, Denver, discussed "Physical Therapy in the Practice of Medicine" before the society, September 1.

## CONNECTICUT

**Society News.**—Dr. Paul D. Rosahn, New Britain, was reelected president of the Connecticut Society of Pathologists at its annual meeting in New Haven, and Dr. Robert Tennant, Hartford, was chosen secretary-treasurer.——Dr. Readie Garfield Snyder, New York, discussed "Recent Advances in the Treatment of Arthritis" before the Bridgeport Medical Society in June. Dr. Edward Lodholz, Philadelphia, addressed the May meeting on "The Biology of Senescence."

**Original Treatises Presented to Yale—Print Collection Established.**—Dr. Joseph Marshall Flint, professor of surgery at Yale University School of Medicine, New Haven, from 1907 to 1921 and for the past twenty-one years in retirement in Vevey, Switzerland, has presented to Yale a group of medical texts including original treatises by Vesalius, Fabricius and Tagliacozzi. The John E. Lane Collection of prints has been established at Yale to be built up around a nucleus of one hundred and thirty-six medical engravings given to the library by Dr. George Blumer, David P. Smith clinical professor of medicine, emeritus. The John E. Lane Collection will include, in addition to Dr. Blumer's gift, the entire collection of prints belonging to the medical school, many of which came to the library through Dr. Harvey Cushing's bequest, as well as all other prints which may be added in the future. The collection is named in memory of the late Dr. John E. Lane, a former member of the faculty, who received his M.A. degree from Yale in 1897 and his M.D. in 1903. He was chairman of the Section on Dermatology and Syphilology of the American Medical Association in 1924-1925.

## GEORGIA

**Twenty-Five Years Director of Health Department.**—Dr. Thomas F. Abercrombie, Atlanta, completed twenty-five years as director of the Georgia Department of Public Health on August 1. He was born in Douglasville and graduated in 1903 at the Atlanta College of Physicians and Surgeons, now a part of Emory University. He was a member of the Rockefeller Sanitation Commission from 1911 to 1913 and commissioner of health of Brunswick and Glynn County from 1914 to 1917, when he became state health director.

## ILLINOIS

**Professor of Chemistry Goes to Winthrop Company.**—Chester M. Suter, Ph.D., professor of organic chemistry, Northwestern University, Evanston, has been appointed director of chemical research of Winthrop Chemical Company, Inc., at Rensselaer, N. Y. Dr. Suter received his Ph.D. at the University of Kansas in 1927.

### Chicago

**Dr. Kendall Retires.**—Arthur I. Kendall, Ph.D., Dr.P.H., research professor of bacteriology at Northwestern University Medical School, retired, effective September 1. Dr. Kendall is 65 years of age. A native of Somerville, Mass., he received the Ph.D. at Johns Hopkins University, Baltimore, in 1904 and the Dr.P.H. at Harvard University, Boston, in 1911. Early in his career Dr. Kendall was acting chief of the board of health laboratory of the Isthmian Canal Commission, Panama, fellow of the Rockefeller Institute and instructor in the department of preventive medicine and hygiene at Harvard Medical School. He was professor of bacteriology and director of the Patten Research Foundation at Northwestern from 1912 to 1924 and dean of the medical school from 1916 to 1924. He went to Washington University School of Medicine, St. Louis, 1924 as professor of bacteriology and public health but returned to Northwestern in 1928 as research professor of bacteriology. In 1918 he was chairman of the yellow fever commission of the International Health Board of the Rockefeller Foundation.

**Presbyterian Hospital Reorganized.**—A general plan of reorganization has taken place at Presbyterian Hospital involving many changes of administration. Dr. Carl W. Apfelbach, in the newly created position of medical director, has been placed in charge of the administration of the hospital, the school of nursing, the Central Free Dispensary and the physical plant of Rush Medical College. Mr. Herman Hensel, who has been assistant superintendent for fifteen years of his twenty-nine years' affiliation with Presbyterian, is now superintendent of the hospital, succeeding Mr. J. Dewey Lutes, resigned. He will supervise the work of the maintenance, housekeeping, laundry, dietetics and clerical departments of the hospital. Mr. Asa Bacon, superintendent emeritus, is assisting the new administration as consultant. The Central Free Dispensary, which for a number of months has been under the supervision of the hospital, is now operating as the outpatient department of the hospital. The buildings of Rush Medical College have been leased to the hospital, which is responsible for the medical education program and research carried on in it. The students of University of Illinois College of Medicine benefit from these facilities under the school's new affiliation with Presbyterian Hospital. Under the new setup Rush retains the privilege of using 15 per cent of the space in the Senn, Rawson and laboratory buildings in a continuance of its program of graduate education. It functions independently under the direction of a board of trustees which controls the funds for its maintenance. Its faculty consists of the following physicians: Vernon C. David, surgery; Ralph C. Brown, medicine; Noble Sproat Heaney, gynecology and obstetrics; Clifford G. Grulee, pediatrics; James Herbert Mitchell, dermatology; Daniel B. Hayden, otolaryngology; Peter Bassoe, neurology; Edward V. L.

Brown, ophthalmology, and Dr. Apfelbach, pathology, all of whom are on the staff of the University of Illinois. All members of the staff of Presbyterian Hospital are also members of the faculty of Illinois. Mr. Charles B. Goodspeed was recently elected president of the board of managers of the hospital and Dr. Heaney president of the hospital staff.

## INDIANA

**Changes in Health Officers.**—Dr. Daniel D. Jones of Berne has been appointed health officer of Adams County.——Dr. Arthur Leiter, Columbia City, has been appointed health officer of Whitley County.——Dr. Laurence E. Jewett has been appointed health officer of Wabash, succeeding Dr. Robert M. LaSalle, who resigned to enter army service.

**Personal.**—Dr. Francis V. Martin, Michigan City, was guest of honor at a dinner given by the La Porte County Medical Society on July 5 in honor of his completion of fifty years in the practice of medicine.——Dr. Mattie J. Bullard, Gary, has been appointed city school physician to succeed Dr. Charles P. Anderson, Gary, who has entered army service.——Drs. John W. Webb, Indianapolis, and Paul R. Tindall, Shelbyville, have been appointed members of the Indiana State Board of Medical Registration and Examination to succeed Drs. Hugh W. Eikenberry, Peru, and Gah T. Bowers, Fort Wayne, respectively.

## KANSAS

**City and County Health Units Combine.**—The health departments of Topeka and Shawnee County have been combined to promote efficiency and economy. Dr. David D. Carr, health officer of Topeka, has been placed in charge of the new unit and a supervising board includes Drs. Floyd C. Taggart, chairman, Paul E. Belknap, Milton B. Miller, William C. Menninger and Clyde S. Smith, Rossville.

## MASSACHUSETTS

**Society News.**—Dr. Donald J. Slaughter, Burlington, Vt., will address the New England Society of Anesthesiology in Boston, November 10, on "New Concepts of Morphine Analgesia." Major Stevens J. Martin, Fort Dix, N. J., will discuss "Role of an Anesthesiologist in the Army" before the society on October 13.

**Lectures on Alcoholism.**—The following series of lectures on various aspects of alcoholism will be given at the Washingtonian Hospital, Boston: Drs. Maurice B. Strauss, October 25, "Alcoholism and Its Effect on the Organs of the Body"; Abraham Myerson, November 15, "Alcoholism and Its Effect on the Mind," and Joseph Thimann, January 17, "Modern Medical Treatment of Acute and Chronic Alcoholism." All speakers are of Boston. These lectures will be open to the public, but admission to the round table discussion on alcoholism, February 14, will be by invitation only.

## MICHIGAN

**Changes in Health Officers**—Dr. George F. Moench, acting head of the Calhoun County Health Department at Marshall, has been appointed director of the Hillsdale County Health Department to succeed Dr. Jacques P. Gray, who resigned to become dean of the Medical College of Virginia, Richmond.——Dr. James A. Olson, Flint, director of the Mott Foundation Children's Center and director of health for the Flint Public Schools, has been appointed acting executive health officer of Flint until a successor to Dr. George Hays can be selected by civil service for the duration of Dr. Hays's leave of absence.——Dr. Raymond G. Tuck, Royal Oak, district health officer in Southern Oakland County, has been appointed health officer of Hazel Park; he will continue to serve as district health director.

**Personal.**—Dr. J. Earle McIntyre, Lansing, secretary of the Michigan State Board of Registration in Medicine, has been elected a member of the National Board of Medical Examiners.——Dr. LeMoyne Snyder, Lansing, has been appointed deputy chief of the emergency medical service in the Michigan Council of Defense to fill the vacancy left by Dr. Lloyd H. Gaston, Lansing, who has been commissioned as a surgeon in the reserve corps of the U. S. Public Health Service.——Drs. David H. O'Donnell and Edward J. Panzner, both of Detroit, were recently presented with the Distinguished Citizen's Medal by the Veterans of Foreign Wars of the United States for their contributions to the Veterans of Foreign Wars.——Dr. Lowell T. Coggeshall, professor of epidemiology, University of Michigan School of Public Health, Ann Arbor, has returned from a three months trip in Africa and the various Middle East countries while serving as director of the air corps ferrying command medical officers, Pan American African Airways. Dr. Coggeshall is now directing the Pan American African medical staff from his office in Ann Arbor. Dr. George M. Jones Jr., instructor in internal medicine at the University of Michigan Medical School, is a member of the African staff; other members were chosen from medical schools all over the United States, it is reported.

**Extramural Course for Physicians.**—The semiannual postgraduate course for graduates in medicine, given under the auspices of the state medical society in cooperation with the University of Michigan Medical School, Ann Arbor, Wayne University College of Medicine, Detroit, and the state department of health, opened on October 1 in Lansing. Sessions have already been held in Battle Creek and Ann Arbor, but a second series of lectures will be presented in both places on October 20 and November 12, respectively. Other centers and dates for the lectures have been announced as follows: Flint, October 13 and 27; Grand Rapids, October 13, November 1; Mount Clemens, October 14 and 28; Saginaw, October 13, November 10, and Traverse City, October 14 and November 11. Topics include surgery of the ambulatory patient, modern treatment of cardiac failure, acute conditions of the abdomen, psychosomatic medicine, the industrial dermatoses and fungous disease of the skin, and accidents and complications of the newborn period and postpartum care. Local hospitals and county medical societies are cooperating in the project, which is offered without charge to practicing physicians. A course is planned for Houghton, Ironwood, Marquette, Powers and Sault Ste. Marie during the week of May 24-28, the subjects to cover the problems in internal medicine, general surgery, pediatrics and obstetrics and gynecology.

## MINNESOTA

**The Jackson Lecture.**—Dr. Thomas Francis Jr., professor of epidemiology, University of Michigan School of Public Health, Ann Arbor, Mich., will present the annual Clarence Martin Jackson lecture in the Medical Science Amphitheater, University of Minnesota, Minneapolis, on "Interpretation of Current Studies in the Control of Epidemic Influenza." The lecture is sponsored by Xi chapter of Phi Beta Pi.

**Professor Ross Gortner Dies.**—Ross A. Gortner, Ph.D., professor of agricultural biochemistry and chief of the division of agricultural biochemistry, College of Agriculture of the University of Minnesota and Minnesota Agricultural Experimental Station, St. Paul, died on September 30 of heart disease, aged 57. Dr. Gortner was a member of many scientific societies and during his career had received many awards; his work accounted for numerous contributions in the field of biochemistry. This year the American Association of Cereal Chemists awarded him its Osborne Medal for his accomplishments in the chemistry of cereals and the improvement of bread flours.

**Southern Minnesota Meeting.**—The Southern Minnesota Medical Association was addressed at its annual session in Rochester, September 28, among others, by:

Dr. Paul R. Lipscomb, Rochester, Fractures of the Astragalus.
Dr. Paul A. O'Leary, Rochester, Technic for Intravenous and Intramuscular Administration of Antisyphilitic Remedies.
Dr. Edward C. Rosenow, Rochester, Poliomyelitis Antistreptococcic Serum in the Diagnosis and Treatment of Epidemic and Experimental Poliomyelitis.

One feature of the session was a symposium on civilian and industrial accidents:

Dr. Howard K. Gray, Rochester, Chest Injuries.
Dr. Roscoe C. Webb, Minneapolis, Injuries to the Abdomen.
Dr. Ralph K. Ghormley, Rochester, Compound Fractures.
Dr. Henry H. Young, Rochester, Gas Gangrene of the Extremities.
Dr. Paul F. Dwan, Minneapolis, Preparation of Human Serum.
Dr. William H. Bickel, Rochester, Treatment of Shock and the Plasma Treatment of Burns.
Dr. Elmer G. Wakefield, Rochester, Heat Strokes.

## MISSOURI

**Dr. Scott Goes to California.**—Gordon H. Scott, Ph.D., associate professor of histology, Washington University School of Medicine, St. Louis, has been appointed professor of anatomy at the University of Southern California School of Medicine, Los Angeles.

**New Health Center.**—A new health center will be erected in Independence with the assistance of federal funds. Examination rooms, x-ray and dental clinics will be on the first floor and the administrative section with facilities for the director, visiting nurse and sanitary division. The laboratory and sterilizing room will occupy quarters on the second floor, and the assembly room will be in the basement. The city of Independence has bought the site, and the cost of $48,000 for building and equipment is being provided by the war public works section of the federal works agency.

**Head of Red Cross Midwestern Area.**—Dr. Howard B. Mettel, chief of the bureau of maternal and child health of the Indiana State Board of Health and acting director of the division of services for crippled children in the state department of public welfare, Indianapolis, has been appointed director of medical and health service of the Midwestern Area of the American Red Cross with headquarters in St. Louis, effective October 1. Dr. Mettel has also been assistant professor of pediatrics and assistant in medical economics and postgraduate instructor at the Indiana University School of Medicine, Indianapolis.

## NEW YORK

**Lecture on War Medicine.**—The Medical Society of the State of New York announces a special lecture on war medicine and surgery for a joint meeting of the Onondaga County Medical Society and the Syracuse Academy of Medicine in Syracuse, October 20. Dr. Jacques W. Maliniac, New York, will discuss "Early Treatment of War Wounds, with Emphasis on Prevention of Deformities."

### New York City

**Tests Required Annually.**—Hunter College started x-ray examinations of its 4,000 pupils in September in compliance with a recent resolution of the board of higher education requiring annual x-ray and serologic tests for all students in the city colleges. Upper freshmen, upper sophomores and upper juniors are now being examined in the medical offices of the college. The rest of the student body will be given x-ray examinations in February.

**Assistant Dean Appointed at Columbia.**—Aura E. Severinghaus, Ph.D., associate professor of anatomy at Columbia University College of Physicians and Surgeons, has been appointed assistant dean of the college. Dr. Severinghaus received his Ph.D. at Columbia in 1927. He had been assistant in zoology there from 1916 to 1927 and from 1919 to 1920, when he became instructor at Pekin Union Medical College. He subsequently served as assistant professor and dean of the premedical school, joining the Columbia staff again in 1927.

**Dr. L'Esperance Awarded Clement Cleveland Medal.**—Dr. Elise Depew Strang L'Esperance, a founder of the Kate Depew Strang Cancer Prevention Clinic of the New York Infirmary for Women and Children and associate commander of the Women's Field Army of the American Society for the Control of Cancer, has been presented with the Clement Cleveland Medal, awarded annually by the New York City Cancer Committee "for outstanding contributions to cancer control work." The medal was presented at a joint dinner of the American Society for the Control of Cancer and the New York City Committee, September 24. Dr. L'Esperance and Miss Kate Strang, her sister, founded the Strang Cancer Prevention Clinic in 1933 with a gift of $30,000 in memory of their mother. Since then one more cancer prevention clinic has been established at the New York Infirmary for Women and Children and three more at the Memorial Hospital for Cancer and Allied Diseases.

**Health Laboratory Observes Fiftieth Anniversary.**—The city department of health announces the completion of fifty years' service of its laboratory, which, according to the New York *Times*, was also the first laboratory regularly maintained for biologic diagnosis by any public agency. A feature of the anniversary celebration is an exhibit of newspaper reports on an epidemic of cholera which was responsible for the foundation of the laboratory in 1892. The late Dr. Hermann M. Biggs, who was designated chief of bacteriology and disinfection on Sept. 13, 1892, persuaded the city to appropriate funds for a laboratory to combat the cholera. The laboratory was quickly installed in a few rented rooms on the third floor of a brick house at 42 Bleecker Street and was considered an anticholera station. Under Dr. Biggs and later under the late Dr. William H. Park the New York laboratory was maintained to fight other communicable diseases, developing into the William Hallock Park Laboratory.

**School Programs Adapted to Physicians' Recommendations.**—The city department of health has during the past year assumed new responsibility for the control of special programs in schools for orthopedic, cardiac and under par children in the elementary schools serving as an approving agency for changes in the regular school routine for children with physical defects. The department will attempt to interpret to teachers recommendations from physicians, will observe the certain adjustments of children on special school programs and will keep the physicians informed of these adjustments. The programs in the elementary schools for orthopedic, cardiac and under par children can now be planned around the specific recommendations of the physicians who are treating the children. Under a setup whereby the schools are prepared to adapt their programs, children will be excused from the regular physical training programs for a substitute period of study or rest, if necessary, the luncheon period will be lengthened by fifteen or thirty minutes, and children will be provided with two sets of books, one to be kept in the home, thus making it unnecessary for the child to carry books to and from the school. Children with an intelligence quotient above 75 who are unable to come to school will be given home instruction if their physical condition permits. The city department of health announces that these adaptations of the school program are at the service of the private and clinic physician, who may prescribe them for his young patients as readily as he does a medication, a diet or a home routine for rest. Recommendations for the under par child will be made on the regular school health referral form. These forms may be obtained from the Bureau of Child Hygiene, 125 Worth Street.

## OKLAHOMA

**Changes in the Faculty.**—The state medical journal announces the following resignations from the faculty of the University of Oklahoma School of Medicine, Oklahoma City: Irvin S. Danielson, Ph.D., assistant professor of biochemistry, to join the staff of Lederle Laboratories; Carl A. Bunde, Ph.D., instructor of physiology, to accept a similar position at Baylor University School of Medicine, and Irwin C. Winter, Ph.D., assistant professor of pharmacology, to join the staff of the Council on Pharmacy and Chemistry of the American Medical Association. Alton C. Kurtz, Ph.D., instructor in physiologic chemistry, University of Pennsylvania School of Medicine, Philadelphia, has been appointed assistant professor of biochemistry at Oklahoma.

## PENNSYLVANIA

**Dr. Stewart Appointed State Health Officer.**—Dr. Alexander H. Stewart, Harrisburg, acting secretary of the state board of health since 1941, has been appointed secretary. Dr. Stewart, before his appointment as acting secretary, had been serving as deputy secretary since 1939.

**Rehabilitation Program for the Tuberculous.**—The appointment of a special tuberculosis agent on the staff of the Reading district of the state rehabilitation bureau marked the beginning of the second cooperative rehabilitation program in which tuberculosis organizations in Pennsylvania are joining with the official agencies. The first was begun in 1939. Mr. Floyd L. Kefford, Philadelphia, is the agent. State and local health groups are participating in the program.

### Pittsburgh

**Lecture on Tropical Diseases.**—Dr. Eugene R. Kellersberger, New York, executive secretary of the American Mission to Lepers and formerly a medical missionary in Belgian Congo, Africa, delivered a lecture at the Mellon Institute, October 9, under the auspices of the University of Pittsburgh School of Medicine. The subject of the lecture was "Twenty-Four Years' Experience with Tropical Diseases."

**New Psychiatric Hospital.**—The Western Pennsylvania Psychiatric Hospital has been opened on the campus of the University of Pittsburgh. The new institution will offer treatment, care and welfare of patients, research and teaching. The new unit will form a part of the medical center at the University of Pittsburgh, consisting of the medical school, the Falk Clinic and Presbyterian, Woman's, Eye and Ear, Municipal and Magee hospitals. Accommodations have been provided for 250 patients. Eight floors have been set aside for the care of psychotic adults and children. The hospital will function with other institutions under the control of the department of welfare in investigating clinical and laboratory problems and therapy and will eventually take a prominent part in the training of physicians for advancement in the state service, according to the *Pennsylvania Medical Journal*.

## VIRGINIA

**Changes in the Faculty.**—Dr. Henry B. Mulholland, professor of practice of medicine at the University of Virginia Department of Medicine, Charlottesville, has been appointed assistant dean. Other changes include the promotion of Dr. Samuel A. Vest Jr. to professor of urology and the retirement of Dr. Robert B. Bean as professor of anatomy.

**Institute on Health in Industry.**—An institute on health in industry was held in Richmond, September 24, for employers of labor, personnel directors, physicians, nurses and organized labor, under the auspices of the committee on industrial health of the Medical Society of Virginia. The speakers included

Dr. Millard C. Hanson, Richmond, "Services of the City Health Department to Industrial Plants"; Dr. William L. Weaver, Richmond, "Full Time Medical Services in Industry"; Dr. Fred J. Wampler, Richmond, "Medical Service for the Smaller Plant," and Dr. James G. Townsend, Bethesda, Md., "Importance of Industrial Health in War Effort." William Kirk, Ph.D., manager, dye works, E. I. du Pont de Nemours and Co., Pennsgrove, N. J., addressed the dinner meeting. One feature of the program was a discussion of the "Cost of Ill Health in Industry."

## WEST VIRGINIA

**Committee to Conserve Vision.**—Dr. Richard O. Rogers, Bluefield, president of the West Virginia State Medical Association, recently appointed a committee on conservation of vision composed of Drs. Virgil E. Holcombe, Charleston, chairman; Welch England, Parkersburg, and Raymond A. Tomassene, Wheeling. The purpose of the committee is to cooperate with the National Society for the Prevention of Blindness and the committee on conservation of vision and prevention of blindness of the American Medical Association in matters which pertain to the conservation of vision in West Virginia.

## GENERAL

**Meeting Suspended.**—The American Association for the Advancement of Oral Diagnosis has postponed its annual meeting on account of the present emergency. The meeting was to be held in Boston, November 12-13. H. Justin Ross, D.D.S., New York, is the secretary.

**Examination in Pediatrics.**—The American Board of Pediatrics announces that a written examination will be held locally throughout the country on February 12 under a monitor. Oral examination will be held on March 27-28 in St. Louis and on April 24-25 in New York. The closing dates for these examinations will be on December 1 for St. Louis and on January 1 for New York.

**Rocky Mountain Medical Conference Canceled.**—The executive committee of the Rocky Mountain Medical Conference has by unanimous vote directed that the fourth biennial meeting of the conference, originally scheduled for May 19-21 at Albuquerque, N. M., be postponed indefinitely on account of war conditions. The current organization of the conference will be retained subject to further advice from the continuing committee, and current funds of the conference will be invested in U. S. war bonds as far as is practicable.

**Campaign to Control Cancer.**—A course in cancer control measures was begun on September 14 at Bar Harbor, Maine, under the auspices of the American Society for the Control of Cancer. The training is to qualify the women, who represent 225,000 volunteer workers as officers of the women's field army, to educate the public. Women completing the course are expected to organize similar schools in each state. Another course was held in New York September 21-25. According to the New York *Times*, the complete war service program to be organized in each community is to function through a health education unit, a medical aid unit and a hospital unit.

**New Journal of Biochemistry.**—The *Archives of Biochemistry* is a new publication announced by the Academic Press, Inc., 125 East Twenty-Third Street, New York. The first issue will appear about the middle of October. Two volumes are planned a year, the cost of each volume to be $5.50. The editorial board is composed of Moses L. Crossley, Ph.D., American Cyanamid Company, Bound Brook, N. J.; Ross A. Gortner, Ph.D. (deceased), University of Minnesota; Fred C. Koch, Ph.D., Armour and Company, Chicago; Clive M. McCay, Ph.D., Cornell University, Ithaca, N. Y.; F. F. Nord, Ph.D., Fordham University; Frits W. Went, Ph.D., California Institute of Technology, Pasadena, Calif., and Chester H. Werkman, Iowa State College, Ames.

**Association of American Medical Colleges.**—The fifty-third annual meeting of the Association of American Medical Colleges will be held in Louisville, October 26-28, under the presidency of Dr. Loren R. Chandler, San Francisco. The program will include the following:

Dr. Hugh R. Leavell, Louisville, Coordinating Program of Health, Hospital and Medical School in a Municipal University.
Dr. Edwin Cowles Andrus, Baltimore, Medical Research in Wartime.
Dr. Harold S. Diehl, Minneapolis, The Relationship of the Procurement and Assignment Service to Medical Education.
Dr. Allen O. Whipple, New York, A Study of the Results of the Examinations in Anatomy by the American Board of Surgery.
Dr. Maurice H. Rees, Denver, Finger Printing of Medical Students.
Dr. S. Spafford Ackerly, Louisville, The Teaching of Psychiatry to Undergraduate Medical Students.
Dr. Russell M. Wilder, Rochester, Minn., Teaching of Nutrition.

**American Public Health Association.**—The seventy-first annual meeting of the American Public Health Association will be held in St. Louis, October 24-30, under the presidency of Dr. John L. Rice, New York. The session will be held in the Municipal Auditorium. The Ninth Institute on Public Health Education will be conducted on October 24-27 in connection with the national meeting. There will be fifty-four members on the faculty of the institute to carry out discussions on a wide range of public health topics. The meeting of the association will be presented in sections. Included among the many speakers on the program will be:

Dr. Victor E. Levine, Omaha, Recognition of Vitamin Deficiencies in Human Beings.
Dr. Frederick W. Jackson, Winnipeg, Man., Vaccination Against Encephalitis.
Icie Macy Hoobler, Ph.D., Detroit, Protein in the Diet of Man.
Dr. Carl M. Peterson, Chicago, The Training of the Physician.
Dr. Kenneth F. Maxcy, Baltimore, The Hypothetical Relationship of Water Supplies to Poliomyelitis.
Dr. Harry D. Kruse, New York, Nutritional Needs of American Youth.
Dr. Leroy U. Gardner, New York, Physiologic Response to Magnesium Dust.
Dr. Albert S. McCown, Washington, D. C., First Aid Instruction in Relation to Health Education.

There will be symposiums on syphilis, industrial hygiene and war, training of industrial hygiene personnel, water and milk borne infections, tuberculosis, nutritive values of dried and dehydrated fruits and vegetables, chemical and engineering methods in industrial hygiene, respiratory diseases and environmental sanitation. At the first general session, announcement will be made of the winner of the Sedgwick Memorial Medal. Meetings at the same time will include the American Social Hygiene Association, Conference of Municipal Public Health Engineers and Conference of State Sanitary Engineers, Conference of State and Provincial Public Health Laboratory Directors, Illinois Conference on Public Health and Illinois Public Health Association.

## LATIN AMERICA

**Course in Internal Medicine.**—Dr. George E. Burch, instructor of medicine, Tulane University of Louisiana School of Medicine, New Orleans, conducted a graduate course in internal medicine and cardiovascular diseases at the Hospital Santo Tomas, Panama City, in August. The program consisted of ward rounds, consultations, an introductory course in cardiography and evening lectures, which were given in the Gorgas Memorial Institute. The course was given at the invitation of the government of Panama.

**Poliomyelitis Closes Schools in Havana.**—Health authorities on September 28 ordered primary schools in Havana and Marianao, Cuba, closed as infantile paralysis cases continued to increase, according to the New York *Times*. No official figures were issued, but the local press has reported several deaths in Havana, it was stated. Since the majority of the cases are among children under 10 years of age, only the primary schools are now affected. However, a number of private schools and higher grade schools have already closed voluntarily, the *Times* said. It was further reported that schools in several districts of the island have been suspended during the past few weeks, and public concern is growing over the spread of the disease.

## FOREIGN

**Prizes Awarded.**—The honorary medal of the Royal College of Surgeons of London has been awarded to Lord Nuffield in recognition of his service in "assisting the improvement of natural knowledge and of the healing art and of his many liberal acts and distinguished labors inspired by the desire to advance the science and practice of medicine and surgery." *Science* reports that this medal was instituted one hundred and forty years ago, and this is the nineteenth occasion on which it has been awarded. The Gilbert Blane Medal of the Royal Navy was presented recently to Surg. Comdr. Edward Rex Pascoe Williams for his original work on blast effects in warfare. This medal was founded in 1830 by Sir Gilbert Blane, a physician known for sanitary reforms in the navy and for successful measures for the prevention of scurvy. It is awarded annually to a medical officer in the Royal Navy for "skill, diligence, humanity and learning the exercise of professional duties." The Moxon Medal of the Royal College of Physicians of London has been awarded to Prof. Leonard G. Parsons, Birmingham, England, for his observation and research in clinical medicine, especially in pediatrics. The Weber Parkes Prize was given to Prof. Gruham S. Wilson, London, England, for his work on tuberculosis, according to *Science*.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Aug. 28, 1942.

### The Increase of Tuberculosis

In a discussion in the House of Lords on the treatment of tuberculosis Viscount Dawson (physician) said that there was a decline in the mortality of tuberculosis from 90 per hundred thousand persons ten years before the war to 60 in 1938, which was no mean achievement. The mortality went up considerably in the first year of the war and continued to rise in the second year. The total increase was 13 per cent. A more anxious feature of the situation was the selective character of the infection among different classes. There was a tendency for increased infection among young women and young children, particularly with regard to tuberculous meningitis. But on the whole tuberculosis was under control. As a large proportion of cattle were tuberculous, it would be wise to pasteurize milk. The medical profession had been crying for organized compulsory pasteurization for years, but prewar governments had been stiffnecked, and the result was that pasteurization was patchy—in some boroughs it was good, in others bad and in country districts most of the milk drunk was raw. The opportunities for contracting tuberculosis were greater under the strain of war. The chief difficulty was that it was common for infected persons to have vague symptoms or none at all. Mass roentgenography would make a considerable advance in early diagnosis.

For the government Lord Snell said that the position was no worse than it was a year ago. There was need for the immediate enrolment of 1,200 nurses for work in sanatoriums for the tuberculous. It had been repeatedly stated that this nursing involved no greater risk than nursing in other hospitals. The ground lost was due to war conditions, which the Ministry of Health and the doctors could not control. The minister of health shared in the anxiety felt regarding the new encroachments of tuberculosis and would use every means to deal with the situation.

### Advice to Students About to Join the Medical Corps

In *University College Hospital Magazine*, a well known surgeon, Brigadier E. M. Cowell, gives some advice to medical students who are about to joint the Army Medical Corps. He reminds them that this is total war. Before they can treat soldiers they should know about the composition of military units, vehicles and weapons. They should learn how to handle weapons in the Home Guard. They may be able to save lives of more soldiers by a practical knowledge of camouflage, sandbagging or the actual use of weapons than by carrying out ordinary medical duties. In modern war there is no such thing as a front line with safe rear areas. Paratroops may descend anywhere and tanks cut communications at any time. By the Geneva Convention doctors are allowed to defend themselves and their patients, and the best defense may be attack. In modern war there is no such thing as a specialist noncombatant. The most important link in the medical lines of communication is the regimental medical officer. During preparation and training it is his duty to keep officers and men fit. He takes part in the life of the unit and gets to know every one of the eight hundred odd men, treats minor ailments and supervises all hygiene. In battle it is said that a good medical officer is worth two hundred rifles. Soldiers fight better when they have confidence in him.

### Treatment of Rupture of the Urethra

At the Section of Urology of the Royal Society of Medicine Mr. Clifford Morson, who opened a discussion on rupture of the urethra, pointed out that this was the most serious of all injuries of the genitourinary tract, not because of the immediate mortality, which was negligible, but because of the subsequent ill health. In view of the war, one type of laceration of the urethral mucous membrane was of particular importance. In a comminuted fracture of the pubic arch due to a war wound there is much danger that a spicule may be subsequently detached and penetrate the urethra. This complication may occur some years after the fracture has united. Thus in one case micturition had been normal ever since fracture of the pelvis by a piece of shell in the last war. In 1925 the soldier was suddenly seized with pain and retention of urine. The catheter was blocked by what seemed a calculus, but roentgenograms showed a bone spicule in the membranous urethra. Such a complication could be prevented by removing all fragments in treating a gunshot wound of the pelvis.

The diagnosis of complete rupture is usually made clear by retention of urine and bleeding from the urethra. In incomplete rupture a few drops of blood may appear at the meatus followed by blood stained micturition. On no account should a catheter be passed for diagnostic purposes; it would damage the mucous membrane. If there is any doubt as to whether the urethra is completely ruptured the urethroscope is the only instrument which should be used. In every case of suspected injury of the urethra the pelvis should be roentgenographed to exclude fracture.

Treatment varies according to whether the rupture is complete or incomplete. For the latter it is necessary only to confine the patient to bed for a few days, provided the pelvis is not fractured. Instrumentation is entirely contraindicated. If a large hematoma forms in the perineum a small incision may be necessary to evacuate it. Urethroscopy is necessary every six months to study the formation of scar tissue. After a year the degree of stricture and how often dilation will be required can be determined.

In complete rupture the urine must be diverted as soon as possible. A self-retaining angular tube must be inserted suprapubically into the bladder by the trocar and cannula technic. About the third day, when shock has passed off, the torn ends of the urethra may be joined. The closure of the suprapubic fistula does not occur until healing of the urethra is complete, a period of one or two months. During this time metal bougies must be passed weekly. The patient will have a stricture for the rest of his life, and periodic dilation will be necessary.

No matter what the technic, the ultimate results are uniformly bad. In many cases the scarring is so extensive that micturition is impossible and the patient is condemned to permanent cystostomy. In other cases frequent dilation, supplemented by internal urethrotomy, is necessary.

### Maternity and the War

Addressing the conference of the National Association of Maternity and Child Welfare Centers, the minister of health, Mr. Ernest Brown, urged that mothers should take full advantage of the fruit juices and cod liver oil available for young children through the welfare centers. Expectant and nursing mothers should also see that they get their extra rations and use all of them themselves. Only too often mothers endangered their own health and the growth of their babies by giving part of their rations to other members of the family. The babies born in emergency maternity homes set up under the war evacuation scheme numbered 57,000. With the recent increase in the birth rate the demand for midwives was greater than ever. The minister appealed to all trained midwives to stay in the profession or return to it.

## BUENOS AIRES

*(From Our Regular Correspondent)*

Aug. 30, 1942.

### National Institute of Nutrition

The National Institute of Nutrition of Buenos Aires was established in 1928 as a municipal branch of the Rawson Hospital and was made independent of the hospital in 1938 and transformed into a national center. Dr. Pedro Escudero is the director. The work of the institute includes biologic, sociologic and economic research on nutrition, education on nutrition and social care of the people. It has six departments. The medical department has a polyclinic with offices for consultation on specialties and clinics and wards for surgery, radiology and kinesiology. It also has laboratories for clinical and pharmaceutic work. Patients who cannot pay for drugs may have them free of charge. The department of nutrition is in charge of the clinic of nutritional diseases, of a section for social and economic information of the department, of a center for free distribution of mother's milk, of the dispensary and of the care of gardens for children. The research center includes the departments of microbiology, microscopy, biologic and bromatologic chemistry and dietetics. The center for education on nutrition instructs the public through the press, radio, moving pictures, exhibits and lectures. The technical center includes the National School for Dietitians and a two year course for physicians who wish to specialize in nutrition. The National School for Dietitians, founded in 1935, gives a diploma to those who complete a three year course on nutrition and dietetics. A requisite for entering the school is to be a graduate from a national college or to have a B.S. diploma. There are also some abbreviated courses which enable the students to a diploma of auxiliary dietitian. There are also courses for nurses. The Ateneo de Clínica de la Nutrición and the Asociación Argentina de Dietología are two organizations under the auspices of the institute. The former is an association of physicians who specialize in nutrition, whereas the latter is constituted by physicians, dietitians and auxiliary dietitians.

Dr. Pedro Escudero recently published a book, "La Política Nacional de la Alimentación en la República Argentina," which was edited by the Instituto Nacional de la Nutrición. The last part of the book contains the report of some of the research carried on by the institute on the nutritional conditions of the population of Buenos Aires as seen from medical, social and economic angles. There are also chapters on the means actually used to improve the nutritional conditions of the people as well as for preventing and controlling nutritional diseases in the country.

### Transmission of Equine Encephalitis to Man

Dr. R. Cibils Aguirre, a pediatrician and director of public aid of Buenos Aires, recently directed attention to the transmission of equine encephalitis to man. Dr. Valdez of Córdoba and his collaborators reported several cases of encephalitis in children which were coincident with an epidemic of encephalitis in horses. The authors have observed 36 cases. They have sent some material for study to the Instituto Bacteriológico Nacional. Drs. Hanon and Bardeci of Buenos Aires have seen about 20 cases in the city, and the Instituto Bacteriológico Nacional has made a bacteriologic study of these cases, but the results have been negative. Professor Rosenbusch of the Facultad de Veterinaria of Buenos Aires in 1934 found that the virus of equine encephalomyelitis was similar to the occidental type but was less virulent. Several epidemics of encephalomyelitis in horses have been observed in the course of the last few years. The greatest focus of infection has been in Buenos Aires; other foci were in parts of Entre Ríos, Santa Fé, Córdoba, San Luis, La Pampa and Río Negro.

## MEXICO

*(From Our Regular Correspondent)*

Aug. 30, 1942.

### Graduation at School of Public Health

Doctors and nurses who finished a postgraduate course on epidemiology and public health administration and public nursing during the first semester of the year received their diplomas from Dr. Víctor Fernández Manero, federal director of health, in the auditorium of the Institute of Tropical Diseases. Twelve doctors of the Supervisors' General Office of the Federal Department of Health who received a certificate of public health and epidemiology will leave for their respective zones in the country, and twenty-two public health nurses who finished the course left for their own jurisdictions.

The first Institute of Public Health Education was held in the School of Public Health and Hygiene. Twenty-eight health officers, one from each state health organization, attended lectures and seminars, which were in charge of well known professors and specialists in different fields of public health, hygiene and publicity.

### Prophylaxis of Endemic Goiter

A recent decree signed by President Avila Camacho regulates the prophylaxis of endemic goiter in Mexico. Through different surveys carried out by public health authorities and private institutions, the goitrous zones have been limited. In some of those zones, especially in the states of Hidalgo, Michoacán, Puebla and Guanajuato, goiter is quite prevalent. Simple goiter in Mexico is called bocio, papera, buche, papada, quebradura, cucu, huchuecho or queschpoxahuatl in the different goitrous regions. In accordance with the law, a goitrous zone is that in which 20 per cent of the inhabitants present goiter in any degree. In such zones only iodized salt should be used for domestic purposes besides other measures, such as iodizing water supplies. Any person or firm dealing with salt must iodize it. The penalties for not accomplishing such orders will be from progressive fines to permanent closure of establishments. The federal Department of Health is responsible for the enforcement of such regulations.

### Thomas Parran Visits Mexico

Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, attended the Interamerican Conference on Agriculture as a counselor. He was declared a guest of honor of the Federal Department of Health and was received by President Avila Camacho and by the National Academy of Mexico. Dr. Parran visited the Institute of Tropical Diseases, the School of Hygiene and Public Health, the tuberculosis sanatorium in Huipulco, the Institute of Hygiene, the Central Laboratories and the Army Hospital. He inspected the malaria works in the state of Morelos and other services under the control of the Federal Department of Health and the Secretariat of Public Assistance.

### New Officers of the Mexican Pediatric Society

At the last meeting of the Mexican Society of Pediatrics, the following officers were elected: president, Dr. Demófilo González; vice president, Dr. Rigoberto Aguilar P.; secretary, Dr. A. Elisa Machain, and treasurer, Dr. Ernesto González Tejeda.

## Marriages

Roscoe Legrand Wall Jr., Winston-Salem, N. C., to Miss Florence Emma Delaney in Glenside, Pa., recently.

Leon J. Witkowski, La Porte, Ind., to Miss Roberta Vacheront in Chicago, July 11.

Everett H. Baker, Louisville, Ky., to Miss Mildred Smith of New Albany, Ind., July 6.

# Deaths

**Harry Myrrel Stewart** ● Johnstown, Pa.; Jefferson Medical College of Philadelphia, 1905; specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., and the American College of Radiology; fellow of the American College of Physicians; president of the Cambria County Medical Society in 1920 and the Pennsylvania Radiological Society in 1918; served as a captain in the medical corps of the U. S. Army during World War I; for many years chief of radiology in the Memorial, Mercy and Lee hospitals; aged 66; died, August 28.

**Donald Miner** ● New York; University of Vermont College of Medicine, Burlington, 1906; member and past president of the Medical Society of New Jersey; past president of the Society of Surgeons of New Jersey; fellow of the American College of Surgeons; was awarded the Croix de Guerre from the French government and the Distinguished Service Cross for his service during World War I; for many years on the staff of the Christ Hospital, Jersey City; aged 58; died, September 13, at Amagansett, L. I.

**Hugh Duncan McGaughey** ● Joplin, Mo.; University of Kansas School of Medicine, Kansas City, Kan., 1906; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc.; served overseas as a captain during World War I; retired lieutenant commander, U. S. Naval Reserve; treasurer of the Jasper County Medical Society; aged 61; on the staff of the Freeman Hospital and St. John's Hospital, where he died, August 13, of coronary occlusion.

**Wilbur Samuel Hamilton** ● San Antonio, Texas; Hahnemann Medical College and Hospital, Chicago, 1895; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., and the American College of Radiology; past president of the Bexar County Medical Society; aged 70; died, August 27.

**Payette Harding Baldwin,** Bloomington, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; member of the State Medical Society of Wisconsin; past president of the Grant County Medical Society; served as a lieutenant in the medical corps of the U. S. Army during World War I; served as director of the school board of Bloomington; aged 57; died, August 22, in the Columbia Hospital, Milwaukee, of ulcerative colitis and pulmonary embolism.

**William Clinton Finch,** Los Angeles; University of Louisville (Ky.) Medical Department, 1897; member of the California Medical Association; formerly director of the tuberculosis division and the communicable disease control division of the city health department; joined the U. S. Army and served in the Philippine Islands and during the Boxer Rebellion in China; major in the medical corps of the U. S. Army Reserve; aged 69; died, August 10.

**Charles Austin Groves,** East Orange, N. J.; New York Homeopathic Medical College, New York, 1881; formerly member of the board of medical examiners; one of the founders of the Homeopathic Hospital of Essex County, now known as the East Orange General Hospital, where he was a member of the board of trustees and on the consulting staff; aged 91; died, August 16, at his summer home in Craigville, Mass.

**William Johnson Matthews,** Johnson City, Tenn.; College of Physicians and Surgeons, Baltimore, 1892; member and formerly vice president of the Tennessee State Medical Association; past president of the Washington County Medical Society; for many years served as city physician; a founder and for many years president of the Appalachian Hospital; aged 75; died, August 28, of coronary thrombosis.

**Frederick Mueller** ● Chicago; Medizinische Fakultät der Universität Wien, Austria, 1896; professor emeritus of orthopedic surgery at Loyola University School of Medicine; formerly professor of orthopedic surgery at the Milwaukee Medical College; on the staffs of St. Mary's Hospital, Milwaukee and the Columbus Hospital; aged 71; died, September 10, at Hendersonville, N. C., of coronary thrombosis.

**William Homer Strahan** ● Covington, Ky.; College of Physicians and Surgeons, Memphis, Tenn., 1907; served as a captain in the medical corps of the U. S. Army during World War I and was associated with the U. S. Public Health Service in Washington, D. C.; at one time connected with the Veterans Bureau at Cincinnati; aged 56; died suddenly, August 19, of coronary thrombosis.

**Otto Lewis Muench,** Washington, Mo.; Miami Medical College, Cincinnati, 1887; member of the Missouri State Medical Association; served in the medical corps of the U. S. Army during World War I; formerly U. S. Pension Examining Surgeon; member of the school board; at one time city physician and recorder of vital statistics for Franklin County; aged 80; died in July.

**Benjamin Joseph Boyd,** Jamaica, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1915; member of the Medical Society of the State of New York; served as a first lieutenant in the roentgenologic branch of the Cornell Medical Unit during World War I; served as school physician; aged 54; died, August 6, in the Mary Immaculate Hospital.

**Remaldo Vinton Ellis** ● Ketchikan, Alaska; Willamette University Medical Department, Salem, Ore., 1912; past president and vice president of the Alaska Territorial Medical Association; fellow of the American College of Surgeons; formerly associated with the U. S. Public Health Service; on the staff of the Ketchikan General Hospital; aged 53; died, August 10.

**Lawrence Lee Washburn** ● Benton, Ky.; University of Louisville Medical Department, 1907; past president and secretary of the Marshall County Medical Society; president of the Southwest Kentucky Medical Association in 1920; served in the medical corps of the U. S. Army during World War I; aged 60; died, August 6, in the Illinois Central Hospital, Paducah.

**George Le Roy Wissig,** Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1920; member of the Medical and Chirurgical Faculty of Maryland; on the staffs of the West Baltimore General, Maryland General, Bon Secours and St. Agnes' hospitals; aged 44; died, August 12, of coronary thrombosis.

**Charles Peter Frantz,** Burlington, Iowa; Northwestern University Medical School, Chicago, 1900; fellow of the American College of Surgeons; on the staffs of the Burlington, the Mercy and St. Francis hospitals; oculist and aurist, Chicago, Rock Island and Pacific Railway; aged 73; died, August 21, of embolism of the left lung.

**Samuel Evans Watkins,** Washington, D. C.; Georgetown University School of Medicine, Washington, 1892; member of the Medical Society of the District of Columbia; demonstrator of dermatology and genitourinary diseases at his alma mater from 1892 to 1896; aged 71; died, August 19, of myocarditis and hemorrhagic nephritis.

**Harvey Milton Griffith,** Conemaugh, Pa.; Western Reserve University Medical Department, Cleveland, 1885; member of the Medical Society of the State of Pennsylvania; aged 81; died, July 9, in the Conemaugh Valley Memorial Hospital, Johnstown, of acute retention of urine and benign hypertrophy of the prostate.

**Thomas Ahern Shaughnessy,** New York; University of Vermont College of Medicine, Burlington, 1905; was a major in the medical corps of the U. S. Army during World War I, serving in France and with the Army of Occupation in Germany; aged 64; died, August 26, in the Veterans Administration Facility.

**Ross H. Speer** ● Vandergrift, Pa.; Western Reserve University Medical Department, Cleveland, 1887; for many years a member of the school board; aged 78; died, August 23, in the Allegheny General Hospital, Pittsburgh, of postoperative pneumonia following partial gastrectomy for carcinoma of the stomach.

**Frank Oldham Miller,** Ellicott City, Md.; University of Maryland School of Medicine, Baltimore, 1902; member of the Medical and Chirurgical Faculty of Maryland; served during World War I; aged 64; died, August 25, in the University Hospital, Baltimore, of arteriosclerosis and coronary thrombosis.

**Benjamin Stich,** New York; University and Bellevue Hospital Medical College, New York, 1911; member of the Medical Society of the State of New York; aged 57; diagnostician at the New York Post-Graduate Medical School and Hospital, where he died, August 11, of coronary thrombosis.

**Ladimer Joseph Blaszczak,** Cleveland; Loyola University School of Medicine, Chicago, 1936; member of the Ohio State Medical Association; aged 34; associate staff member of St. Ann's Maternity Hospital and St. Alexis Hospital, where he died, August 29, of pulmonary tuberculosis.

**Harry Tyldesley,** Central City, Ky.; Louisville Medical College, 1903; served during World War I; local surgeon for the Illinois Central Railroad; on the staff of the Muhlenberg Community Hospital, Greenville; aged 68; died, August 22, of cerebral hemorrhage and arteriosclerosis.

**James L. Adams,** Barberton, Ohio; State University of Iowa College of Medicine, Iowa City, 1929; president of the Barberton Clinic; aged 37; died, August 23, in the De Ette Harrison Detwiler Memorial Hospital, Wauseon, of injuries received in an automobile accident.

**William Roy Riddell** ● Jackson, Ohio; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1922; past president and secretary of the Jackson County Medical Society; served during World War I; aged 45; died, August 16, in an automobile accident.

**Ralph Joseph Iszard,** Haddonfield, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1900; on the courtesy staff of the West Jersey Homeopathic Hospital, Camden; aged 64; died, August 27, of endocarditis, diabetes mellitus and arteriosclerosis.

**David Arthur Lines,** New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1891; member of the Louisiana State Medical Society; formerly collector of internal revenue; aged 82; died, August 21, of hypertension and coronary disease.

**John Lipscomb Frazer,** Fitzgerald, Ga.; University of Louisville (Ky.) Medical Department, 1891; member of the Medical Association of Georgia; served as a captain in the medical corps of the U. S. Army during World War I; aged 75; died, August 9.

**Joseph Henry Gann,** Brookport, Ill.; St. Louis University School of Medicine, 1905; member of the Illinois State Medical Society; secretary of the Massac County Medical Society; physician and surgeon for the Illinois Central Railroad; aged 61; died, August 6.

**Frank L. Greenewalt,** Wilmington, Del.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; for thirty years physician to Girard College, Philadelphia; aged 76; died, August 21, in Greenville of undulant fever and arteriosclerosis.

**Luigi Dominick Di Stefano,** Baltimore; Medical College of Virginia, Richmond, 1914; for many years medical examiner for the recruits at the local army recruiting station; aged 53; on the staff of the Franklin Square Hospital, where he died, August 15.

**Gasper Gasper Mauceri,** Brooklyn; Regia Università degli Studi di Roma, Facultà di Medicina a Chirurgia, Italy, 1941; aged 25; intern at St. Catherine's Hospital, where he died, August 14, of chronic glomerulonephritis, uremia and hypertension.

**Charles B. Stewart,** Huntington, Texas; Memphis (Tenn.) Hospital Medical College, 1900; member of the State Medical Association of Texas; president of the Angelina County Medical Society in 1931; aged 63; died recently in a hospital at Lufkin.

**Patrick J. Brannon** ● Denison, Iowa; Sioux City College of Medicine, 1904; at one time assistant to the chair of dermatology at his alma mater; physician and owner of the Denison Hospital; aged 66; died, July 11, of coronary occlusion.

**Marvin E. Nuckols** ● Richmond, Va.; University College of Medicine, Richmond, 1897; formerly lecturer and demonstrator of operative surgery and clinical assistant to the chair of clinical surgery at his alma mater; aged 65; died, July 21.

**Frederic Joseph Shoop,** Utica, N. Y.; College of Physicians and Surgeons, New York, 1883; member of the Medical Society of the State of New York; aged 80; died, August 10, in the Masonic Home Hospital of chronic myocarditis.

**Frederick Eugene Traganza,** Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1928; on the staff of the Germantown Hospital; aged 40; was found dead, August 6, in Wildwood, N. J., of acute coronary occlusion.

**William Arthur Campbell,** Chicago; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1892; for many years examiner for the Mutual Benefit Life Insurance Company; aged 71; died, August 31, of coronary thrombosis.

**Joseph Lynn Deitrick,** Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1891; member of the Medical Society of Virginia; aged 74; died, August 30, in the Norfolk General Hospital of acute coronary occlusion.

**James A. Branyon,** Fayette, Ala.; Louisville (Ky.) Medical College, 1892; member of the Medical Association of the State of Alabama; aged 73; died, August 19, in the Touro Infirmary, New Orleans, of carcinoma of the stomach.

**Alexander Watkins Terrell** ● Lynchburg, Va.; Hospital College of Medicine, Louisville, Ky., 1886; for many years resident physician at the Randolph Macon Woman's College; aged 81; died, August 30, of carcinoma of the colon.

**Frank Joseph Raterman,** Fort Loramie, Ohio; Ohio Medical University, Columbus, 1907; member of the Ohio State Medical Association; served as a member of the school board; aged 64; died, August 27, of coronary thrombosis.

**Arthur J. Brower,** Holland, Mich.; Detroit College of Medicine, 1900; past president of the Ottawa County Medical Society; aged 66; died, August 2, in the Blodgett Memorial Hospital, Grand Rapids, of coronary thrombosis.

**William Delpuech,** Knoxville, Tenn.; University of Pennsylvania Department of Medicine, Philadelphia, 1884; member of the Tennessee State Medical Association; aged 84; died, August 7, at the Knoxville General Hospital.

**William James Chambers,** Los Angeles; Jefferson Medical College of Philadelphia, 1890; served as a major in the medical corps of the U. S. Army during World War I; aged 77; died, August 21, of chronic myocarditis.

**Edward Orson Hopkins,** Rochester, Minn.; Johns Hopkins University School of Medicine, Baltimore, 1937; member of the Minnesota State Medical Association; aged 31; on the staff of the Mayo Clinic, where he died, July 26.

**Hugh Percy Fleming,** Ottawa, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1895; served as a captain with a hospital unit in France during World War I; aged 72; died, August 10, in Kent, England.

**John Edward Hasson,** Bath, N. Y.; Eclectic Medical College of the City of New York, 1899; formerly served as county coroner and as a member of the board of health of Bath; aged 66; died, August 25.

**Leslie Watts Schwab** ● Chicago; College of Physicians and Surgeons of Chicago, 1896; an Affiliate Fellow of the American Medical Association; on the staff of the Jackson Park Hospital; aged 76; died, July 11.

**Albert Agnew Thomas** ● Indianapolis; Johns Hopkins University School of Medicine, Baltimore, 1908; served as a captain in the medical corps of the U. S. Army during World War I; aged 58; died, July 18.

**John McTyeire Stewart,** Van Buren, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1912; member of the Arkansas Medical Society; aged 57; died, August 17, in a hospital at Fort Smith.

**Edgar Earl Gelder,** Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1902; on the staff of the Presbyterian Hospital-Olmstead Memorial; aged 63; died, August 18, of coronary disease.

**Daniel M. Easter,** Greensburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; member of the Medical Society of the State of Pennsylvania; aged 82; died, August 28, in Baltimore.

**Charles Vincent Wadlinger,** Port Carbon, Pa.; Medico-Chirurgical College of Philadelphia, 1908; served in France during World War I; aged 56; died, July 9, in the U. S. Naval Hospital, Philadelphia.

**Andrew William Dowd,** Santa Monica, Calif.; Rush Medical College, Chicago, 1899; at one time member of the board of education of Carbon County, Utah; aged 73; died, August 29, of cerebral hemorrhage.

**Joseph Rodolphus Dillinger** ● French Lick, Ind.; Hospital College of Medicine, Louisville, Ky., 1903; past president of the Indiana Academy of Ophthalmology and Otolaryngology; aged 66; died, August 16.

**Royal San Clare Fisher,** Arcadia, Ind.; Hahnemann Medical College and Hospital, Chicago, 1906; served as a major in the medical corps of the U. S. Army during World War I; aged 69; died, August 26.

**William Joseph Blackshear,** Panama City, Fla.; Kentucky School of Medicine, Louisville, 1892; at one time associated with the U. S. Public Health Service; aged 77; died, August 19, of chronic myocarditis.

**Wilson Davis Baird Jr.,** Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1926; member of the Oklahoma State Medical Association; aged 40; died, August 19, of pneumonia.

**Orlando B. Pettijohn,** Noblesville, Ind.; Indiana Medical College, Indianapolis, 1874; member of the Indiana State Medical Association; for many years member of the school board; aged 92; died, July 24.

**James Irvin Plyler,** Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1905; member of the Medical Society of the State of Pennsylvania; aged 69; died, August 12, of cerebral hemorrhage.

**Anthony Damas Joseph Pelletier** ● Lewiston, Maine; Yale University School of Medicine, New Haven, Conn., 1934; aged 36; was accidentally drowned, July 4, while on a fishing expedition at Rangeley.

**Nelson Howard Caplan,** Boston; Tufts College Medical School, Boston, 1942; aged 25; intern at the Gallinger Municipal Hospital, Washington, D. C., where he died, August 11, of acute appendicitis.

**Fred Harrison Bell,** Long Beach, Calif.; Hahnemann Medical College and Hospital, Chicago, 1903; served in the medical corps of the U. S. Army during World War I; aged 65; died, August 3.

**Christian Herman Beyer,** Milwaukee; Rush Medical College, Chicago, 1895; member of the State Medical Society of Wisconsin; aged 70; died, September 4, of cerebral hemorrhage and arteriosclerosis.

**Donald Laughlin MacKinnon,** Truro, N. S., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1905; aged 68; died, August 1, in the Inverness (N. S.) County Memorial Hospital.

**Clarence Henry Frederick** ● Lorain, Ohio; University of Cincinnati College of Medicine, 1923; served during World War I; president of the staff of St. Joseph's Hospital; aged 44; died, July 14.

**Paul Arthur Westbrook** ● Columbus, Kan.; University of Oregon Medical School, Portland, 1934; aged 36; was killed, August 6, when the automobile in which he was driving was struck by a train.

**Frank Erastus Beauchamp,** Albany, Ore.; Willamette University Medical Department, Salem, 1902; on the staff of the Albany General Hospital; aged 64; died, August 24, of angina pectoris.

**Howard B. Boone,** Chandlerville, Ill.; Northwestern University Medical School, Chicago, 1897; president of the community high school board; formerly bank president; aged 69; died, July 27.

**Arthur R. Heyward,** Warwick, Ga.; Medical College of the State of South Carolina, Charleston, 1892; member of the Medical Association of Georgia; aged 71; died, August 2, of typhus fever.

**Thomas D. MacGillivray,** Port Arthur, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1905; aged 62; died, July 11, following an explosion on a launch on Lake Shebandown.

**Clinton H. Gilmer,** Villa Grove, Ill.; Kentucky School of Medicine, Louisville, 1888; aged 76; died, August 31, in the Douglas County Jarman Hospital, Tuscola, of cerebral hemorrhage.

**George E. Welker,** Dresden, N. Y.; University of Buffalo School of Medicine, 1900; member of the Medical Society of the State of New York; aged 67; died, August 24, of cerebral hemorrhage.

**James Dudley George,** Corinth, Ky.; Pulte Medical College, Cincinnati, 1892; member of the Kentucky State Medical Association; bank president; aged 73; died, August 26, of myocarditis.

**Herbert Hustis Best** ● West Pembroke, Maine; New York University Medical College, New York, 1896; aged 71; died, August 20, near Coboconk, Ont., Canada, of coronary thrombosis.

**Horace Gibbons Painter,** Irwin, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1903; died, August 14, in the Mercy Hospital, Pittsburgh, as the result of injuries received in a fall.

**Thomas Edward Larner,** Marysville, Calif.; University of Vermont College of Medicine, Burlington, 1907; member of the California Medical Association; aged 58; was found dead, July 5.

**Clarence Morris Hatheway** ● West Hartford, Conn.; University and Bellevue Hospital Medical College, New York, 1903; aged 60; died, August 3, of hypernephroma with metastases.

**Albertus A. Cheney** ● Lyndonville, Vt.; University of Vermont College of Medicine, Burlington, 1887; at one time a druggist; aged 79; died, August 22, of chronic myocarditis.

**George Samuel Row** ● Indianapolis; Miami Medical College, Cincinnati, 1890; member of the American Academy of Ophthalmology and Otolaryngology; aged 75; died, July 8.

**Charles A. Critchlow,** Grand Rapids, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1894; aged 72; died, July 28, in the Blodgett Memorial Hospital.

**Luther M. Abbott,** New Castle, Va.; Baltimore Medical College, 1898; member of the Medical Society of Virginia; aged 72; died, August 16, of hypertension and heart disease.

**John Jacob Knoll,** Vermilion, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1915; aged 61; died, July 31, in the Royal Victoria Hospital, Montreal.

**Daniel MacDonald,** Sydney, N. S., Canada; College of Physicians and Surgeons, Baltimore, 1892; served as a major during World War I; aged 81; died, July 31, in Mabou.

**Edward Ambrose Secoy,** Orient, Ohio; Physio-Medical College of Indiana, Indianapolis, 1899; formerly mayor of Darbyville; aged 67; died, August 26, of angina pectoris.

**Jackson Searles,** York, Pa.; Ohio State University College of Medicine, Columbus, 1925; served during World War I; aged 47; died, August 31, of acute dilatation of the heart.

**Nicholas E. Woessner,** Huron, Ohio; Northwestern University Medical School, Chicago, 1893; member of the Ohio State Medical Association; aged 73; died, July 31.

**Walter Adjutor Maguy,** Chicago; Hahnemann Medical College and Hospital, Chicago, 1912; on the staff of St. Francis Hospital, Blue Island, Ill.; aged 56; died, July 18.

**J. Stucky Smith,** Bayonne, N. J.; Long Island College Hospital, Brooklyn, 1898; aged 66; died, August 20, in Germantown, N. Y., of cerebral hemorrhage.

**George A. Dennis** ● Montgomery, Ala.; Southern Medical College, Atlanta, Ga., 1893; formerly on the staff of St. Margaret's Hospital; aged 69; died, July 21.

**Howard Marshall Smith,** Richmond, Va.; University of Maryland School of Medicine, Baltimore, 1889; also a dentist; aged 75; died, July 4, of heart disease.

**Charles L. Chapple,** Olympia, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1898; aged 73; died, August 19, of arteriosclerosis.

**Orman Stafford Whitmore** ● Bath, N. Y.; Syracuse University College of Medicine, 1934; aged 33; was killed, August 27, in an automobile accident.

**Marshall Lord Warrin,** New York; College of Physicians and Surgeons, New York, 1885; aged 83; died, July 6, at his summer home in Amagansett, L. I.

**George Joseph Saylin,** Los Angeles; University of Buffalo School of Medicine, 1910; aged 66; died, August 4, in the Cedars of Lebanon Hospital.

**Albert A. Anderson,** Los Angeles; Rush Medical College, Chicago, 1882; member of the Iowa State Medical Society; aged 84; died, July 27.

**Herbert George Finley Blair,** North Gower, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1902; aged 66; died, July 10.

**Jeff T. Holcombe,** Mineral Springs, Ark. (licensed in Arkansas in 1903); member of the Arkansas Medical Society; aged 78; died, July 31.

**Jean Baptist Cloutier,** Letellier, Man., Canada; Manitoba Medical College, Winnipeg, 1916; aged 52; died, August 5, of cerebral hemorrhage.

**Dalraddy L. Macdonald,** Shawinigan Falls, Que., Canada; McGill University Faculty of Medicine, Montreal, 1912; aged 56; died, June 23.

**John Fred Quenzer,** Chicago; Dunham Medical College, Chicago, 1901; Hering Medical College, Chicago, 1904; aged 79; died, July 27.

**Frederick Walter Luhman** ● Pender, Neb.; Rush Medical College, Chicago, 1902; aged 63; died, August 10, of coronary thrombosis.

**Rolland Lee Marrett,** Silver City, N. Mex.; University of Texas School of Medicine, Galveston, 1927; aged 44; died, August 19.

**Fred W. Nause,** Sheboygan, Wis.; Chicago Homeopathic Medical College, 1887; aged 78; died, August 18, of bronchiectasis.

**Charles H. Manning,** Chicago; Rush Medical College, Chicago, 1894; aged 71; died, August 21, of heart disease.

# Bureau of Investigation

## STIPULATIONS

### Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines" or medical devices have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**ADM Wheat Germ Oil.**—According to a stipulation which the Archer-Daniels-Midland Company, Minneapolis, signed with the Federal Trade Commission in April 1942, the following misrepresentations, among others, are to be discontinued in the advertising of this product: that it is a competent remedy for nervousness, lack of vitality, hay fever or dandruff or will prevent colds, or that the use of wheat germ oil or vitamin E produced by the solvent extracted process causes or may cause cancerous growths.

**Allay.**—This is put out by Pickgan Labrofacts, Inc., New York, which in April 1942 stipulated with the Federal Trade Commission that it would discontinue the following advertising misrepresentations: that through use of the word "pain" unqualified as to type of pain, this product normally will afford some measure of relief or that it has any appreciable effect on persistent and frequently recurring pain; that it is safe for use and affords a new method in its field; that it begins to act in three seconds after being taken or that it has any efficacy in preventing development of colds or is an effective cold remedy. Further, the concern stipulated that it would not publish any advertisements which do not clearly reveal that Allay should not be used in excess of the recommended dosage, since such use might be dangerous. It was provided, however, that when the labeling contains an appropriate warning it will be sufficient if the advertisement states "Caution, use only as directed." This 1942 stipulation was accepted by the Commission as a substitute for one covering similar practices which the same concern had signed in June 1940. That case was abstracted in this department of THE JOURNAL, Sept. 13, 1941, page 952.

**Apolene.**—This was sold as a remedy for rheumatism, sinusitis, hay fever, head and chest colds, bronchitis, influenza and eczema by Claude R. Wadlington, John T. King and G. P. Thomas, operating as Claude R. Wadlington Company, Hopkinsville, Ky. In May 1942 these persons stipulated with the Federal Trade Commission that they would discontinue these and some other misrepresentations.

**Bolk.**—The Cal-Par Corporation of New York signed a stipulation with the Federal Trade Commission in February 1942 in which it agreed to discontinue the following misrepresentations for this product: that it acts as an intestinal tonic, relieves constipation in a natural manner or is safe to use in cases of colitis or constipation; that it will always be of benefit where symptoms of headache, nausea, dimmed eyesight or weakness are present; that it will prevent toxins from breaking down the intestinal walls and entering the blood stream or will forestall degenerative changes in nerves, glands or organs or be a safeguard against obesity. The concern also agreed to cease issuing any advertisement which failed to reveal that Bolk should not be used when abdominal pain, nausea or other symptoms of appendicitis are present, provided, however, that the advertisement need contain only the statement, "Caution, use only as directed," if and when the label itself bears an adequate warning about the danger in using Bolk when these symptoms are present.

**Dr. McKenzie's Sanitary Health Sox.**—In April 1942 one David M. Conn, wholesaler of hosiery, New York, stipulated with the Federal Trade Commission that he would cease using the abbreviation "Dr." or the word "Doctor" either with or without the name "McKenzie" in the trade style for this hosiery, which use might imply that there is a physician connected with the manufacture of this product or that the hosiery has been made under the supervision of a physician. Conn further agreed to cease using the word "Health" as part of the trade name or as descriptive of his hosiery products, or any other implication that his merchandise has special health features capable of warding off or ameliorating disease or pain.

**Dr. Merritt's Health Shoes.**—Because these have not been designed or made under the supervision of a physician and do not possess special scientific, orthopedic or health features which are the result of medical determination or services, the Merritt Shoe Company, Inc., Boston, signed a stipulation with the Federal Trade Commission in April 1942 in which it agreed to discontinue use of the terms "Doctor," "Dr." and "Health" from the name of its shoes.

**Effervescent Seltzer and Ritz Breath Purifier.**—The first-named of these is put out under the name of Honoroff Laboratories, Inc., Chicago, whose president is one Fred A. Honoroff. In March 1942 the concern stipulated with the Federal Trade Commission that it would cease disseminating any advertisements which did not conspicuously reveal that the product should not be used in excess of the dosage recommended, since this might cause dependence on a drug or result in skin eruptions, mental derangement or collapse, and that it should not be administered to children. The stipulation provided, however, that it would be sufficient for the advertisements to warn the reader "Caution: Use only as directed," provided that the label called attention to the dangers mentioned above. The Honoroff Laboratories, Inc., trading under a different name, Ritz Laboratories, also put out Ritz Breath Purifier, and they further stipulated that in selling the latter product they would cease representing that it prevents bad breath or destroys breath odors. In 1938 another government agency, the Food and Drug Administration, also took action against the Honoroff concern for violating the Pure Food and Drugs Act in representing on the labels of Effervescent Seltzer that this nostrum was good for stomach disorders and after-effects of excessive eating and drinking. In this connection government chemists reported that the product was essentially a mixture of baking soda, citric and tartaric acids, with 1.2 per cent of acetanilid (3 grains per ounce), 2.8 per cent of sodium bromide and caffeine.

**Fahrney Products.**—From Chicago the Dr. Peter Fahrney and Sons Company puts out a number of nostrums including "Forni's Alpenkrauter," "Forni's Magolo" and "Forni's Heil-Oel Liniment." These three were mentioned in a stipulation which the concern made with the Federal Trade Commission in March 1942. In this the company agreed to cease representing that the Alpenkrauter will regulate the bowels, relieve rheumatic pain, ward off disease and beneficially affect skin eruptions; that the Magolo will neutralize acids in the stomach or be of benefit in diarrhea due to "summer complaint," and that the Heil-Oel Liniment is a competent treatment for severe burns, corns and calluses or wounds from rusty nails, and may be used for backache with beneficial results, unless such representation is limited to the type of this disorder in which such results may be obtained. Forni's Alpenkrauter was reported some years ago by the state chemists of North Dakota to contain over 14 per cent of alcohol, about 13 per cent of sugar and a little laxative material.

**Fernol Concentrate.**—Arthur T. Wilson, trading as the Fernol Company, Chicago, stipulated with the Federal Trade Commission in May 1942 that he would no longer represent that this product will take off weight without deleterious effects and that he would discontinue any advertisements which failed to reveal that its continued or frequent use may result in severe gastrointestinal irritation and interference with the digestive processes and cause dependence on laxatives. Further, he agreed that his future advertising would warn the user that "Fernol Concentrate" should not be used when symptoms of appendicitis are present, such as nausea, vomiting and abdominal pains. The stipulation provided, however, that it would be sufficient for the advertising to contain the simple warning, "Caution, use only as directed," if and when appropriate warning and directions for use were given on the label.

**Garfield Headache Powders.**—In May 1942 the Garfield Tea Company, Brooklyn, stipulated with the Federal Trade Commission to discontinue any advertisements which did not clearly reveal that this product should not be used in excess of the dosage recommended, lest it cause dependence on the acetanilid which it contains, or bring on a collapse, and that it should not be taken by or administered to children. The stipulation provided, however, that the advertisements need contain only the statement, "Caution: Use only as directed," if and when the directions in the labeling contain an appropriate warning.

**Muscle-Rub.**—In May 1942 Herman H. Kronberg, trading as Muscle-Rub Company, Inc., Philadelphia, stipulated with the Federal Trade Commission that in the advertising of this rubefacient he would no longer represent that it is a new discovery or is effective in relief of pain due to rheumatism, lumbago, neuritis, sciatica, neuralgia or lameness, or possesses any value in excess of giving temporary relief as a mild counterirritant rub in those cases of minor pain or discomfort where use of this type of preparation is indicated. In two instances in 1935 the Food and Drug Administration reported that it had taken action against Kronberg, then trading as Roo-Mo-Rub Corporation, Philadelphia, because of false claims made on the labels of an alleged rheumatism cure that he was then selling as "Roo-Mo-Rub." Government chemists reported that it was a mixture of alcohol (80 per cent), water and a small amount of wintergreen oil.

**Odoform.**—That this is valuable in the treatment of gout, rheumatism, dropsy, paralysis, skin and blood disorders, diabetes, indigestion or kidney and bladder complaints, and that Odoform baths surpass world-renowned mineral baths or that the product when used as directed is antiseptic or prophylactic or has sterilizing properties, are misrepresentations which James J. Bessemer, trading as Bessemer Health Products and as Bessemer Chemical Company, Miami, Fla., agreed to discontinue in his advertising, according to a stipulation which he signed in April 1942 with the Federal Trade Commission.

**Oil-of-Salt.**—In April 1942 Edgar B., Minnie F., F. S. and Fred D. Penny, operating as the C. A. Mosso Laboratories, Chicago, stipulated with the Federal Trade Commission to discontinue the following misrepresentations in their advertising of this product: that it possesses any hemostatic properties, is an effective relief for ivy poisoning or of value in treating burns except those of a minor nature, or athlete's foot or other foot ailments unless they are specified by name. The

Pennys further stipulated that they would no longer represent that in the experience of executives in industrial concerns Oil-of-Salt is the most effective first-aid that they have used or that the majority of them employ it exclusively, when such statements are not supported by facts. In addition they agreed to cease using the word "Laboratories" as part of their firm name unless they actually own and operate a laboratory, and to stop representing, by use of the brand name, Oil-of-Salt, or otherwise, that the product possesses salt in any therapeutic amount. In two instances (in 1929 and 1930) Oil-of-Salt was declared in federal courts to violate the Pure Food and Drugs Act because of false and fraudulent statements in the labeling. According to government chemists' reports in these cases, the product consisted essentially of linseed oil, turpentine, camphor and carbolic acid, and bacteriological examination showed that it possessed no germicidal properties and only very weak antiseptic action. Recent inquiries indicate that the name of the product has been changed to "Oil-O-Sol."

**"Permanent Relief from Sinus Trouble and Asthma."**—This is the title of a book sold by an Erwin W. Hasebrouck, Norfolk, Neb. In January 1942 he stipulated with the Federal Trade Commission that he would cease representing that to follow the advice given in his book will have any effect on the treatment of asthma or afford permanent relief from sinusitis.

**Ru-Mari.**—That this is an effective treatment for arthritis, neuritis, rheumatism, sciatica, lumbago, gout or pain associated with these conditions was a misrepresentation which William G. Carr and Ronald Brunswick, Jr., trading as Ru-Mari Company, Los Angeles, agreed to drop from their advertising, in a stipulation that they signed with the Federal Trade Commission in March 1942. A similar one was signed by W. C. Jeffries of Los Angeles, who operates under the name W. C. Jeffries Company, advertising agency for the Ru-Mari concern. In an action brought by another government agency, the Food and Drug Administration, against the American Ru-Mari Company, Los Angeles, in October 1940, because of false claims on the label, a government chemist testified that Ru-Mari contained about 99 per cent of water with small amounts of potassium carbonate and the sulfate, chloride, hydroxide and carbonate of sodium, with a trace of an organic compound such as chloramine-T. This nostrum was dealt with at some length in THE JOURNAL, Sept. 12, 1936, page 894.

**Sas-Nak.**—In a stipulation signed with the Federal Trade Commission in March 1942 one Arthur T. Wilson, trading as the Sas-Nak Company, Kansas City, Mo., agreed to discontinue the following misrepresentations in the advertising: that the product is a cure, remedy or effective treatment for indigestion, kidney, bladder, liver and stomach disorders, rheumatism, colds, influenza and skin eruptions or that it has any value in treating such conditions beyond the temporary relief that it may give by partially evacuating the intestinal tract, or stimulating the flow of gastric juice. The concern further agreed to discontinue any advertisements which stated that Sas-Nak should be taken regularly every day or which failed to reveal that it should not be used when abdominal pains, nausea, vomiting or other symptoms of appendicitis are present; that frequent or continued use of Sas-Nak may result in dependence on laxatives and that the product contains a powerful poison, strychnine, in quantities sufficient to be dangerous to health if taken in excess of the dosage recommended. The stipulation permitted, however, that it would be sufficient warning to state in the advertisements "Caution, use only as directed," provided that the label carried an appropriate warning.

**"The Philosophy of Fasting," "The Natural Method of Healing," "Return to Nature," "The Water-Cure" and "The Naturopath."**—These are titles of books put out by Benedict Lust of New York, operating as Health Book Service and Benedict Lust Publications. In March 1942 Lust signed a stipulation with the Federal Trade Commission. In this he agreed to cease representing that by reading and following the instructions in these volumes a person will be able to cure or relieve any ailment or disease. Lust stipulated further that he would cease representing that his "health foods" will cure diseases or restore organs to their proper functions and that "Lust's Barley Malt Coffee" is "nerve building." The titles that Benedict Lust has used after his name indicate that he classifies himself largely with the osteopaths and naturopaths, and he has promoted various health fads, besides having had a run-in with the law on more than one occasion.

**Thyperoxol.**—That this product has 5 times the killing power of carbolic acid or may be freely used on burns, that as a first aid application to wounds it will arrest dangerous infections instantly; that it will effectively kill germs even though diluted 400 times, be effective against athlete's foot and relieve pain and that it contains no drugs, are misrepresentations which are to be discontinued in the advertising, according to a stipulation signed with the Federal Trade Commission in April 1942 by Robert C. Harman, trading as Caroh Products Company, Columbus, Ohio.

**Walker's Indian Herbs and Walker's Health Tonic.**—The first-named product was falsely represented as a remedy for diabetes, the continued use of which would enable a patient gradually to consume less insulin, and the second-named one, to treat stomach disorders including ulcers, clean the blood, restore action to the liver and kidneys and remove gravel or gallstones. These misrepresentations were to be discontinued, as agreed by Perceville E. Walker, trading as P. E. Walker and Company, Portland, Ore., in a stipulation that he signed with the Federal Trade Commission in May 1942. According to this he was not to offer the "Tonic" as anything but a bitter stomachic, a mild laxative and a diuretic.

## MISBRANDED COSMETICS

### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and are designated C. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**California Nutrient Cream and Sue Sorrell Texture of Youth Cream.**—Jeanne Tredway, New York. Shipped between June 27 and Dec. 3, 1940. Composition: both products were essentially mixtures of hydrocarbon oils, hydrous wool fat and perfume; California Nutrient Cream contained also sodium borate. The first-named product was misbranded because designation "nutrient cream" was false and misleading; second-named one misbranded because of false label claim "an aid in warding off fine lines and wrinkles."—*(C. N. J., F. D. C., 65; January 1942.)*

**Farr's For Gray Hair.**—Brookline Chemical Company, Boston. Shipped between Oct. 4 and Dec. 1, 1939. Composition: a liquid containing silver nitrate, and tablets containing diamidophenol hydrochloride. Adulterated because of these poisonous or deleterious ingredients. Misbranded because label failed to warn against using this dye on eyelashes and eyebrows, which use might cause blindness, or to caution against use without a preliminary test for user's sensitivity to such dye.—*(C. N. J., F. D. C. 93; May 1941.)*

**Glo-Co Hair Groom for Men.**—Glo-Co Company, Los Angeles. Shipped Aug. 19, 1940. Composition: essentially a mixture of alcohol and castor oil, with perfumed materials. Misbranded because of deceptive claims on label or in accompanying circular, such as "tones the scalp . . . Cleansing with Glo-Co Hair Groom is the first step that helps to restore sebaceous glands to normal action . . ."—*(C. N. J., F. D. C. 62; January 1942.)*

**La-Nu Hair and Scalp Vitalizer.**—La-Nu Distributing Company, Philadelphia. Shipped between Jan. 20 and Feb. 3, 1941. Composition: essentially a mixture of ammoniated mercury, boric acid, oil of eucalyptus and hydrous wool fat. Misbranded because falsely represented as a "hair and scalp vitalizer" and efficacious for alopecia and falling hair.—*(C. N. J., F. D. C. 61; January 1942.)*

**Louise Norris Lash and Brow Coloring.**—Louise Norris Company, Kansas City, Mo. Shipped between Mar. 19 and Aug. 22, 1940. Composition: "Formula No. 1 Prepare," a solution of silver proteinate; "Formula No. 2 Protecto," essentially hydrous wool fat; "Formula No. 3 Absorbo" (or simply "Absorbo"), magnesium carbonate; bottle marked A, a solution of 2,5 toluylenediamine with sulfite and sulfate of sodium; bottle marked B, a solution of hydrogen peroxide. Ingredient 2,5 toluylenediamine potentially dangerous to health if applied under conditions of use prescribed in the labeling or under such conditions of use as are customary. Treatment declared adulterated because of presence of this potential poison and because the latter, a coal tar color, was not from a batch that had been certified according to legal regulations. Treatment also declared misbranded because of false label claim that it conformed with all local, state and federal regulations of the Food, Drug and Cosmetic Act.—*(C. N. J., F. D. C. 32; May 1941, and C. N. J., F. D. C. 59; January 1942.)*

**Mary Lockie Hair Tints.**—Marlu Company, Kansas City, Mo. Shipped between April 21 and June 12, 1941. Composition: included paraphenylenediamine, a poisonous or deleterious substance which might have rendered them injurious when used under customary conditions, and hence adulterated. Misbranded because designation "hair tint" was false and misleading since these products were not hair tints but eyelash and eyebrow dyes.—*(C. N. J., F. D. C. 58; January 1942.)*

**Quinlan Pore Cream and Quinlan Skin Stimulant.**—Kathleen Mary Quinlan, Inc., Distributor, New York. Shipped between Jan. 14 and Feb. 20, 1941. Composition: Pore Cream, essentially petrolatum, zinc oxide, hydrous wool fat, water and perfume; Skin Stimulant, essentially alcohol, water, glycerin, perfume and coloring matter. Products misbranded because of misleading names, falsely representing that they were respectively efficacious for coarse pores and texture, and for stimulating the skin.—*(C. N. J., F. D. C. 64; January 1942.)*

**Spark'l Medicated Skin Cream, Paulette Hair Dressing and Brilliantine Roland.**—Spark'l Company, Brooklyn. Shipped between Jan. 24 and Sept. 11, 1940. Composition not stated. Products declared adulterated because they consisted in part of filthy substances and had been prepared or packed under insanitary conditions.—*(C. N. J., F. D. C. 63; January 1942.)*

**Willat Method of Heatless Permanent Waving.**—Willat Production Company, San Francisco. Shipped between Jan. 1 and May 23, 1941. Composition: included ammonium hydrogen sulfide, a poisonous or deleterious substance, which might have rendered it injurious if applied under such conditions of use as are customary; hence adulterated. Many consignments of this seized in coast-to-coast shipments.—*(C. N. J., F. D. C. 51 to 57, inclusive; January 1942.)*

# Correspondence

## HEALTH ASPECTS OF FUEL OIL RATIONING

*To the Editor:*—Enemy action and the greatly increased burden of the war effort have so seriously curtailed the transportation of petroleum products that households this winter can be heated only by limited supplies of fuel oil; consequently the problem of maintaining health in temperatures lower than usual is not only difficult but must be solved to prevent illness. Before the war the East Coast received about 95 per cent of its oil by means of tankers. So many of these tankers have gone down that an extremely serious dislocation in our petroleum distribution system has come about. In view of the resultant urgent necessity to share limited supplies fairly, the Fuel Rationing Division of the Office of Price Administration has drawn up a plan for the rationing of fuel oil in thirty states designated by the War Production Board. The fullest patriotic cooperation of your profession will be necessary and without doubt will be given.

Basic rations for fuel oil will be allotted householders by the Office of Price Administration through its rationing boards. This ration will be based on past consumption (adjusted for normal weather) and on the thermal efficiency of the house as indicated by a heat loss floor area formula developed and tested by top flight heating engineers. Provision will also be made for auxiliary rations to households in which illness or the infirmities of old age make necessary temperatures higher than that afforded by the basic ration.

Application for such auxiliary ration will be made to the local rationing board by the consumer. His application will have to be supported by certification by a licensed physician. In certifying, the physician should give the date, the name and address of the householder and should certify to the Office of Price Administration (1) whether the illness is of an acute or chronic nature, (2) whether it is the kind which requires higher indoor temperatures, (3) the approximate temperatures required and (4) the approximate period for which this supplemental base heat is needed. The physician may at his discretion state the nature of the illness and give any additional information which will guide the board. This certificate should be given to the applicant, who will file it with the local rationing board.

The success of the rationing plan in meeting the fuel oil emergency equitably and effectively will depend in large part on the kind of patriotism and conscientious cooperation that the medical profession has always given in times of emergency.

It is planned that advisory committees of three members, composed of two licensed physicians and the county or local health officer will be set up by the county or local medical association on request of the local rationing board. These advisory committees will function by reviewing the cases of the certificates questioned by the local rationing board when the board wishes more detailed information and professional opinion. I am sure that the medical and public health professions will cooperate actively in setting up and operating this important auxiliary advisory body.

Joel Dean.

Director, Fuel Rationing Division,
Office of Price Administration.

Note.—The Office of Price Administration makes available the following additional information:

Families with children under 4 years of age will receive a fuel oil allowance of from 50 to 125 gallons, depending on the heating zone, in addition to their basic ration under the new fuel oil ration plan, the Office of Price Administration announced, October 3. Intended as a safeguard for the health of small children, the supplemental allowance will permit raising the temperature in a well insulated house from 65 F., the level provided by the basic ration, to about 70 F. in the space that must be occupied by children. It will not necessarily mean that the entire house can be heated to this temperature, OPA officials stated.

Specific allowances for the four zones are zone A, 125 gallons; zone B, 100; zone C, 75, and zone D, 50. Zone A includes the northernmost and coldest section of the rationed area. The other zones have progressively warmer climates.

The allowances will not be increased for families with more than one child under 4, nor will the size of the house affect the size of the allowance. The gallonage provided in the allowance is considered sufficient to heat adequately whatever space children in the household need to occupy, OPA officials pointed out. Householders will get supplemental rations for children when they register. The fact that children under 4 are living in the house will be noted on the application.

While the allowance for children is the only supplemental ration for which a blanket allowance of a definite number of gallons is provided, the rationing plan will make possible other auxiliary rations when they are needed to avert extreme hardship. Homes with sickness will be afforded additional fuel allowances, as will those in which elderly persons reside. In both of these cases, however, a doctor's certificate will be required. This statement must be presented with an auxiliary ration application, which will determine the amount of fuel necessary to meet the special circumstance. However, OPA officials repeated the warning that applications for any supplemental ration will be denied to applicants who, in the judgment of the local board, can reasonably be expected to convert their furnaces to coal. Only by converting to coal can householders with convertible furnaces be assured all the heat they want for comfort, OPA pointed out.

## "NONSPLINTING TREATMENT OF FRACTURES OF THE ELBOW JOINT"

*To the Editor:*—In the June 27 issue of The Journal a communication was published from Dr. D. H. O'Donoghue commenting on my article entitled "Nonsplinting Treatment of Fractures of the Elbow Joint," which appeared in the issue of March 21.

The obvious misconception as indicated by the two chief objections to this method of treatment should be clarified. The objections are essentially that the method oversimplifies the treatment of fractures of the elbow and that anatomic reposition should be obtained.

The nonsplinting treatment of fractures of the elbow is by no means an oversimplification of treatment. On the contrary, the method involves greater skill, care and time than the usual splinting method. As to the anatomic reposition, it was indicated that in these fractures the fragments are difficult and frequently impossible to realine and that it is even more difficult to hold them in realinement. Fractures with fragments of sufficient size so that they can be manipulated and maintained should obviously be so treated.

This method of treatment was stimulated by two observations. First, that many treated fractures, both by specialists and by general practitioners, gave seriously poor results. Second, that a number of patients with fairly extensive fractures did very well with little or none of the accepted treatment.

It was hoped that the publication of this preliminary report would stimulate clinical reports of cases treated by this method and the results obtained rather than theoretical considerations that can be decided only by scientific and unbiased experience.

Abraham A. Neuwirth, M.D., somewhere in Asia.
Lieutenant Colonel, M. C., U. S. Army.

V 1
194

# Medical Examinations and Licensure

## COMING EXAMINATIONS AND MEETINGS

### BOARDS OF MEDICAL EXAMINERS

### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Oct. 3, page 393.

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part III.* Baltimore, Oct. 20-22, and Boston, November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written. Part I.* Various centers, Feb. 4. Final date for filing application is Nov. 6. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, Oct. 12. *Oral.* Chicago, Dec. 4-5. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, Feb. 13. *Oral. Part II.* May 1943. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. All Groups.* New York, Dec. 13-16. Los Angeles, Jan. 15-16. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written.* Chicago, Jan. 9-10. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Feb. 12. *Oral.* St. Louis, March 27-28. Final date for filing application is Dec. 1. New York, April 24-25. Final date for filing application is Jan. 1. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF UROLOGY. February 1943 (tentative). Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis.

### Missouri June Report

The Board of Health of Missouri reports the written examination for medical licensure held at St. Louis, June 4-6, 1942. The examination covered 15 subjects. An average of 75 per cent was required to pass. One hundred and seventy candidates were examined, all of whom passed. The following schools were represented:

| School | PASSED | Year Grad. | Number Passed |
|---|---|---|---|
| Georgetown University School of Medicine | | (1938) | 1 |
| Northwestern University Medical School | | (1939), (1941) | 2 |
| Graduate School of Medicine of the Division of the Biological Sciences | | (1941) | 1 |
| Rush Medical College | | (1942) | 1 |
| The School of Medicine of the Division of the Biological Sciences | | (1938) | 1 |
| University of Chicago, The School of Medicine | | (1941, 2) | 2 |
| University of Illinois College of Medicine | | (1941) | 1 |
| Harvard Medical School | | (1937) | 1 |
| St. Louis University School of Medicine | | (1940), (1942, 74) | 75 |
| Washington Univ. School of Medicine | | (1941, 2), (1942, 76) | 78 |
| University of Rochester School of Medicine | | (1939), (1941) | 2 |
| Jefferson Medical College of Philadelphia | | (1941) | 1 |
| Marquette University School of Medicine | | (1942) | 1 |
| University of Toronto Faculty of Medicine | | (1936), (1938) | 2 |
| Regia Università di Napoli Facultà di Medicina e Chirurgia | | (1935) | 1 |

Seventeen physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners on June 3 and July 25. The following schools were represented:

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of Arkansas School of Medicine | | (1933), (1935), (1941) | Arkansas |
| Rush Medical College | | (1931) | Louisiana, (1937) Illinois |
| University of Illinois College of Medicine | | (1938) | Ohio |
| University of Kansas School of Medicine | | (1938, 2), (1941) | Kansas |
| University of Louisville School of Medicine | | (1926) | Illinois |
| University of Minnesota Medical School | | (1941) | Minnesota |
| St. Louis College of Physicians and Surgeons | | (1909) | S. Dakota |
| John A. Creighton Medical College | | (1917) | Iowa |
| University of Rochester School of Medicine and Dentistry | | (1932) | Ohio |
| University of Cincinnati College of Medicine | | (1941) | Ohio |
| Western Reserve University School of Medicine | | (1932) | Ohio |
| Vanderbilt University College of Medicine | | (1941) | Tennessee |

| School | LICENSED BY ENDORSEMENT | Year Grad. |
|---|---|---|
| St. Louis University School of Medicine | | (1940) |
| Dalhousie University Faculty of Medicine | | (1937) |

### Colorado July Report

The Colorado State Board of Medical Examiners reports the written examination for medical licensure on July 8-10, 1942. The examination included 61 questions. Seven candidates were examined, 4 of whom passed and 3 failed. The following schools were represented:

| School | PASSED | Year Grad. | Number Passed |
|---|---|---|---|
| Harvard Medical School | | (1941) | 1 |
| Osteopaths * | | | 3 |

| School | FAILED | Number Failed |
|---|---|---|
| Osteopaths † | | 3 |

* Licensed to practice medicine and surgery.

† Examined in medicine and surgery.

### Nebraska June Report

The Nebraska State Board of Medical Examiners reports the written examination for medical licensure held at Omaha, June 8-10, 1942. The examination covered 10 subjects. An average of 75 per cent was required to pass. Seventy-six candidates were examined, 74 of whom passed and 2 failed. The following schools were represented:

| School | PASSED | Year Grad. | Number Passed |
|---|---|---|---|
| Creighton University School of Medicine | | (1940), (1941, 3), (1942, 6) | 12 |
| University of Nebraska College of Medicine | | (1939), (1941, 2) (1942, 59) | 62 |

| School | FAILED | Year Grad. | Number Failed |
|---|---|---|---|
| University of Nebraska College of Medicine | | (1941), (1942) | 2 |

Three physicians were licensed to practice medicine by reciprocity and 3 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from January 22 through May 23. The following schools were represented:

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Creighton University School of Medicine | | (1928) | Kansas |
| University of Nebraska College of Medicine | | (1925) | Tennessee |
| University of Oregon Medical School | | (1935) | Oregon |

| School | LICENSED BY ENDORSEMENT | Year Grad. |
|---|---|---|
| Yale University School of Medicine | | (1936) |
| Creighton University School of Medicine | | (1940) |
| Duke University School of Medicine | | (1939) |

### Tennessee March Report

The Tennessee State Board of Medical Examiners reports the examination for medical licensure held at Memphis, March 25-28, 1942. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-two candidates were examined, all of whom passed. The following school was represented:

| School | PASSED | Year Grad. | Number Passed |
|---|---|---|---|
| University of Tennessee College of Medicine | | (1941), (1942, 21) | 22 |

Fifteen physicians were licensed to practice medicine by endorsement from February 11 through June 5. The following schools were represented:

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| College of Medical Evangelists | | (1941) | Georgia |
| Emory University School of Medicine | | (1938) | Georgia |
| Rush Medical College | | (1937) | Minnesota |
| Indiana University School of Medicine | | (1924), (1933) | Indiana |
| University of Louisville Medical Department | | (1910) | Kentucky |
| University of Louisville School of Medicine | | (1925) | Kentucky |
| Tulane University of Louisiana School of Medicine | | (1933) | N. B. M. Ex. |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1941) | Maryland |
| Harvard Medical School | | (1937) | N. B. M. Ex. |
| Western Reserve University School of Medicine | | (1931) | Ohio |
| University of Oklahoma School of Medicine | | (1939) | Oklahoma |
| Hahnemann Medical College and Hospital of Phila. | | (1932) | Penna. |
| Medical College of the State of South Carolina | | (1939) | S. Carolina |
| Medical College of Virginia | | (1933) | Virginia |

# Bureau of Legal Medicine and Legislation

## MEDICOLEGAL ABSTRACTS

**Food, Drug, and Cosmetic Act: Shoo Fly Powders for Drunkenness Misbranded.**—Section 352 of the Federal Food, Drug, and Cosmetic Act provides: "A drug or device shall be deemed to be misbranded—(*a*) If its labeling is false or misleading in any particular" and "(*j*) If it is dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended, or suggested in the labeling thereof." Such misbranded article is liable to condemnation under section 334 "when introduced into or while in interstate commerce . . . , or at any time thereafter, . . . " Acting under the authority of these provisions, the United States filed a libel for the condemnation of 11¼ dozen packages of "Mrs. Moffat's Shoo Fly Powders for Drunkenness." The M. F. Groves' Son & Co. intervened as owner and manufacturer of the articles in question and the case was heard in the district court, western division, New York.

The label on Shoo Fly Powders stated that they were "For Drunkenness," that they contained antimony and potassium tartrate, that "One of the Powders may be given in Beer, Coffee, Tea or any other liquid" and that "These powders are intended to be used by adults only, and should be kept from children." It was admitted that the articles in question had been shipped in interstate commerce. The intervenor first contended that the government was required to show intent to deceive and defraud. The court pointed out, however, that under the present law it is not necessary to prove intent. It was also urged that merely stating that the article is "for drunkenness" is not sufficient to constitute an offense of misbranding. The use of the words "for drunkenness," in the opinion of the court, was the equivalent of saying that the article was a "cure, mitigation, treatment, or prevention" of drunkenness.

According to the evidence, Shoo Fly Powders contained on the average 3.2 grains of potassium antimony tartrate (tartar emetic) and no other constituents. Five physicians testified on behalf of the government, one being a pharmacologist, one an internist, one a specialist in therapeutics and two neuropsychiatrists. All had had extensive experience in their respective specialties. Each testified that antimony and potassium tartrate (tartar emetic) is not a curative for drunkenness, that it is a drug not properly usable in the treatment of drunkenness and that its use in the dosage shown on the label is dangerous to health. Each testified that the medical profession has long recognized that antimony and potassium tartrate is a drug dangerous to be administered through the mouth; that its use through the mouth has been abandoned in the teaching field, and that the standard textbooks treat it as a poison. They further stated that antimony and potassium tartrate, taken through the mouth, irritates the lining of the stomach and intestine and produces injurious effects on various other organs of the body; that its effect is cumulative and that when it is taken in increased doses it causes nausea, vomiting, diarrhea and retching; that after absorption it affects the liver and kidneys, increases the heart rate and through the resulting loss of the control of the muscles of the stomach the vomitus may be "swallowed," causing pneumonia. In conclusion, they added that the medical profession for many years has not prescribed antimony and potassium tartrate to be taken through the mouth except as it is so used in Brown's Mixture, which contains 1/70 grain (0.0009 Gm.) of this drug and that its present use is almost entirely intravenously or intramuscularly as a treatment for numerous tropical diseases.

The only evidence offered by the intervenor was that given by an official of the claimant to the effect that the drug in question had been sold for upward of sixty years; that more than 50,000 of the powder packages have been sold yearly for the last ten years and that not a single case of harm or injury had ever been reported by any one to the manufacturers. Objection was raised to the reception of this official's testimony. The court said that the testimony as to the number of packages of the powder that had been sold and the period over which it had been sold was competent. The testimony that no complaints had been received concerning the powder was held to be incompetent, however.

After referring to the data concerning antimony and potassium tartrate appearing in the U. S. Pharmacopeia and the National Standard Dispensary, the court said that the conclusion was inescapable both that the label on Shoo Fly Powders was false and misleading and that the drug was dangerous to health when used in the dosage prescribed on the label. Accordingly, the court decreed that the articles of drugs should be condemned according to the provisions of the Food, Drug, and Cosmetic Act.—*United States v. 11¼ Dozen Packages, 40 F. Supp. 208 (N. Y., 1941).*

**Medical Practice Acts: Revocation of License for Performance of Abortion.**—The California board of medical examiners, after appropriate notice and hearing, revoked the license of Tobinsky to practice medicine on a charge that he had been guilty of unprofessional conduct in that he performed a criminal abortion on a named pregnant woman. The physician sought by a writ of mandate to compel the board to annul its order of revocation. The trial court denied the writ and the physician appealed to the district court of appeal, second district, division 2, California.

The physician claimed that the evidence received by the board in its hearing was insufficient to justify its action in revoking his license. There was, the physician contended, no evidence that the named woman was pregnant or that the physician had performed an abortion on her or had attempted to do so. But, said the appellate court, it appears from the transcript of the proceedings before the board that the woman in question testified that before going to the physician's office she had experienced nausea and dizziness for about six weeks and that she had missed one menstrual period; that she knew she was pregnant and went to the physician's office for the purpose of having an abortion performed; that she visited the office one day and had a discussion with a nurse employed by the physician; that she returned to the office two days later at which time the physician operated on her by using instruments in her vagina; that her husband paid $60 to the nurse in the physician's office and that this nurse was in the room while the operation was being performed. The husband testified that the physician told him in a conversation subsequent to the operation that "it couldn't have been a very long pregnancy." Agents of the board of medical examiners testified that the physician told them in so many words that he had performed an abortion on the woman in question. There was also testimony at the hearing that after the operation the physician had paid $130 to the woman's husband, which sum, the physician claimed during the course of the hearing, was a "loan" to the husband. We are satisfied, said the court, that the evidence referred to above is sufficient to sustain the order of the board of medical examiners in revoking the physician's license.

After the operation was performed by the physician the woman was taken to the Los Angeles County General Hospital for treatment. During the course of the hearing before the board certain records of the hospital concerning the case were admitted in evidence and the physician contended that the action of the board in admitting such records was erroneous. But, said the appellate court, the resident surgeon of that hospital testified that he examined the woman on April 19, the day she was admitted to the hospital, and that she remained in the hospital until May 13; that the woman told him that an abortion had been performed on her about two weeks previously; that she had had slight bleeding for some two days following the abortion and then was apparently well; that one week later she had chills and fever; that his diagnosis was postabortal abscess; that he had made this diagnosis from statements made by the woman but that so far as his examination disclosed he could not tell whether her trouble

laid resulted from an abortion or from gonorrhea. The hospital records objected to contained notations by physicians other than the resident surgeon in which the woman's trouble was characterized as "postabortal." Whether the hospital records, said the appellate court, were authenticated in such manner as to be admissible in accordance with the strict rules of procedure to be followed in criminal cases need not be decided, for an administrative board passing on the issue of the revocation of a license to practice medicine is not limited by the strict rules applicable to trials of criminal cases. Moreover, we are satisfied that the physician could not have been prejudiced by the introduction of the hospital records. The resident surgeon by his testimony fully informed the members of the board of medical examiners concerning the woman's condition while she was at the hospital, and the basis for the use in the records of the words "postabortal" was fully explained to them.

The appellate court accordingly affirmed the action of the board in revoking the physician's license to practice.—*Tobinsky v. Board of Medical Examiners of State of California, 121 P. (2d) 861 (Calif., 1942).*

**Malpractice: Injury from Circumcision; Res Ipsa Loquitur.**—The plaintiff, an infant son, was taken by his father to the office of the defendant physician for the purpose of undergoing a circumcision. The defendant, with his wife's assistance, performed the operation, using a circumcision clamp. The father was asked to return the plaintiff for examination within a few days but, though the mother talked to the defendant's wife about bleeding, the child was never taken back as requested. Two weeks later the plaintiff was taken to another physician, who examined him and later performed another circumcision, also using a circumcision clamp. The second physician later stated that in performing the second operation he had to cut through scar tissue and that this necessitated dilation of the skin of the organ after the operation. The jury found for the plaintiff and, from an order denying an alternative motion for judgment notwithstanding the verdict or new trial, the defendant appealed to the Supreme Court of Minnesota.

The only question raised on appeal that had to be considered was whether or not the defendant was entitled to a judgment notwithstanding the verdict. The duty or legal liability of a physician or surgeon in treating his patients, said the court, is well settled. Though he does not insure a good result, he must exercise the skill and care that an ordinary member of his school would exercise in his locality. Thus, continued the court, two obligations are imposed on a physician or surgeon, though the dividing line between those obligations is sometimes obscure: (1) To use ordinary skill in diagnosis and method of treatment; (2) to use reasonable care in the manner in which that treatment is applied or, as in this case, the operation performed. The plaintiff alleged lack of both skill and reasonable care. In the first place, said the court, in regard to skill, plaintiff introduced no evidence of the approved or standard method of performing a circumcision in that community, nor did he offer any evidence tending to show that the defendant's methods were unskilful. His only expert witness refused to characterize the defendant's surgery as either unskilful or negligent. The defendant testified that he performed the operation according to methods ordinarily used and approved in his locality, and his testimony was not contradicted or impeached. The plaintiff, therefore, failed to prove that the defendant did not use the required skill in operating on the boy. Secondly, in regard to reasonable care, the court said that the only testimony describing the manner in which the operation was performed was produced by the defendant. This testimony showed no lack of reasonable care, and there was no other proof of negligence.

The plaintiff argued that he had proved a fact situation entitling him to the benefit of the doctrine of res ipsa loquitur, which in a proper case has the effect, in the absence of evidence destroying the inference favorable to plaintiff, of saving him from a directed verdict for defendant. The application of the doctrine permits the trier of fact, in the absence of evidence of specific acts of negligence, to reason from the result back to the cause—to infer fault on the part of the person having control of some instrumentality from the failure of its operation to terminate in a safe or proper result when ordinarily a safe and proper result follows the exercise of care. The court held, however, that no inference of lack of skill or care can be drawn from a failure on the part of a physician or surgeon by treatment or operation to effect a cure, since such failure to cure occurs under the most skilful and careful treatment. Accordingly, the court concluded that the order of the trial court denying the defendant's motion for judgment nothwithstanding the verdict was improper and the order was reversed with directions to enter judgment in favor of the defendant.—*Johnson v. Colp, 300 N. W. 791 (Minn., 1941).*

**Marriage and Divorce: Insistence of Husband on Use of Contraceptive as Desertion Warranting Divorce.**—The unjustified refusal of sexual intercourse, said an advisory master to the court of chancery of New Jersey, persisted in for two years or more by one party to a marriage is a ground for divorce for the cause of desertion. This rule rests on the principle that refusal of sexual intercourse prevents the procreation of children and thereby defeats the controlling purpose of marriage, which is to enable the sexes to gratify lawfully the natural desire for procreation which has been implanted in them that the race may be preserved. Such purpose is likewise defeated when one of the parties solely for his or her own personal selfish convenience insists on contraception to prevent the female from becoming impregnated. Under such circumstances, if the conduct is persisted in for two years or more the aggrieved spouse is entitled to a divorce on the ground of desertion. In this case a decree of divorce on the ground of desertion was advised on the complaint of a wife that her husband refused for two or more years over her protests to have natural "uncontracepted" intercourse with her. It is unthinkable, said the advisory master, that a wife in full health, her maternal instinct clamoring for the realization of her desire to become a mother may, because of the selfishness of her husband, be condemned during her marriage to him to a life of frustration of that maternal instinct and desire, with all of the deleterious physical, emotional and mental effects that follow such frustration.—*Kreyling v. Kreyling, 23 A. (2d) 800 (N. J., 1942).*

## *Society Proceedings*

### COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 11-14. Dr. W. L. Benedict, 102 Second Ave., S.W., Rochester, Minn., Acting Secretary.

American Academy of Pediatrics, Chicago, Nov. 4-7. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Academy of Physical Medicine, Boston, Oct. 14-17. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American College of Surgeons, Cleveland, November 17-20. Dr. Frederic A. Besley, 40 East Erie Street, Chicago, Secretary.

American Hospital Association, St. Louis, Oct. 12-16. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Secretary.

American Public Health Association, St. Louis, Oct. 27-30. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Annual Conference of Secretaries of Constituent State Medical Associations, Chicago, Nov. 20-21. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 5-7. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Dover, Oct. 13. Dr. W. O. LaMotte, Medical Arts Bldg., Wilmington, Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, October 26-30. Dr. Arthur G. Sullivan, 16 North Carroll Street, Madison, Wisconsin, Managing Director.

New York State Association of Public Health Laboratories, Albany, Nov. 6. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 26-30. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Radiological Society of North America, Chicago, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Southern Medical Association, Richmond, Va., November 10-12. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Western Surgical Association, Memphis, Tenn., Dec. 4-5. Dr. Arthur R. Metz, 2449 Washington Blvd., Chicago, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American J. Digestive Diseases, Fort Wayne, Ind.

9:241-274 (Aug.) 1942

War's Challenge to Gastroenterology: Presidential Address. R. S. Boles, Philadelphia.—p. 241.
*Peptic Ulcer and Irritable Colon in the Army. D. T. Chamberlin, Atlanta, Ga.—p. 245.
Diseases of Anorectum and Colon: Review of Certain Recent Contributions. R. Turell, New York.—p. 248.
Gastric Similarities and Differences Between Tropical Sprue and Pernicious Anemia. A. R. Olleros, San Juan, Puerto Rico.—p. 261.
Studies in Human Biliary Physiology: VI. Composition of Continuously Collected Fractions of Liver Bile on Starvation and After High Carbohydrate Feeding. M. Jacobi, B. Kogut, I. C. Zackerman, L. Weil and B. Klein, Brooklyn.—p. 264.
*Influence of Single and Multiple B Complex Deficiencies on Motility of Gastrointestinal Tract. G. J. Martin, M. R. Thompson and J. De Carvajal-Forero, New York.—p. 268.

**Peptic Ulcer and Irritable Colon in the Army.**—Chamberlin states that, of the 3,492 army men admitted to the Lawson General Hospital between August 1941 and May 1942, 1,755 were medical patients and 9 per cent of the total or 18 per cent (316 men) of the medical patients were admitted to the gastrointestinal section. Of the 316, 98 had peptic ulcer (3 gastric and 95 duodenal) and 128 functional digestive disturbances. Most of them were discharged on certificates of physical disability. Of the 18 officers affected only 2 were sent to limited duty; the other 16 were either retired, in the case of the regular army, or sent to inactive duty, in the case of the reserves. Without the assurance of a permanent position or station it is not safe for an ulcer patient to be on duty. Of the 128 with functional disturbance 113 were enlisted men and 15 officers. The disorder was principally an irritable colon. The problem of the disposition of these individuals arose. Of the 113, 76 were discharged on certificate of physical disability with the diagnosis of "intestinal indigestion" and 37 were returned to duty; after two weeks to three months of treatment they became symptom free and were able to tolerate the general mess. These patients, it was felt, would be able to carry on without further hospitalization for their digestive symptoms. Of the 15 officers, 4 with hyperchlorhydria or hypertrophic gastritis were sent to duty, and of the 11 with irritable colon acute diarrhea developed in 4 on the slightest deviation from diet. They were placed on an inactive status and 7 were returned to duty. Only 1 of this group was readmitted with a recurrence. The psychic factors played a more prominent part among these officers than in any other group. The remaining men received on the section had the ordinary conditions seen in civilian practice. Their disposition presented no unusual problems.

**B Vitamin Deficiencies and the Gastrointestinal Tract.**—Martin and his co-workers studied the effect of the different components of the vitamin B complex on the secretion and motility of the gastrointestinal tract in each of six sets of 5 dogs 6 to 8 weeks old. In each of the sets, other than the set which received both inositol and pantothenic acid, there were common features on roentgen study suggesting that the two factors inositol and pantothenic acid are both associated with the maintenance of a normal gastrointestinal function. Other factors, such as pyridoxine, may influence the general picture. The two factors appear to be interdependent. The following features characterize the picture if either is absent from the diet: increased gastric emptying time with pylorospasm, decided segmentation of the small and the large intestine, hypertonicity with hypomotility, alternation of the ribbon-like segments with dilated loops and frequent formation of gas and fluid levels.

### American Journal of Medical Sciences, Philadelphia

204:157-312 (Aug.) 1942

*Rheumatic Heart Disease Complicating Pregnancy: Study of Sixty-One Fatalities. G. L. Hoffman Jr. and W. A. Jeffers, Philadelphia.—p. 157.
Recognition of Virus Type Pneumonia. B. E. Goodrich and H. A. Bradford, Detroit.—p. 163.
*Sulfadiazine in Pneumonia: Treatment in 239 Cases. H. K. Ensworth, M. Kalkstein, S. W. Barefoot, J. Liebmann and N. Plummer, New York.—p. 179.
Absorption, Excretion and Distribution of 2-Sulfanilamidopyrazine (Sulfapyrazine) in Man. M. Hamburger Jr., J. M. Ruegsegger, N. L. Brookens and Esther Eakin, Cincinnati.—p. 186.
Effect of Sulfanilamide on Experimentally Damaged Liver. T. E. Machella, Philadelphia, and G. M. Higgins, Rochester, Minn.—p. 194.
Changes in Copper and Iron Retention in Chronic Diseases Accompanied by Secondary Anemia: II. Changes in Liver, Spleen and Stomach. H. Gross, Marta Sandberg and Olive M. Holly, New York.—p. 201.
Portal Cirrhosis: Correlation of Clinical, Laboratory, Peritoneoscopic and Autopsy Findings. P. Gottardo and W. L. Winters, Chicago.—p. 205.
Treatment, Complications and Deaths in 753 Cases of Clinical Diphtheria. Y. Togasaki, L. Rosove, Los Angeles; A. G. Bower, Glendale, Calif., and P. M. Hamilton, San Marino, Calif.—p. 218.
Effect of Kidney Position on Renal Blood Flow and Function. D. J. Gabriele, Milwaukee.—p. 227.
Giant Follicular Lymphoblastoma (Giant Lymph Follicle Hyperplasia). I. W. Held and J. Chasnoff, New York.—p. 232.
Acute Myocardial Infarction Without Deviation of ST Segment in Electrocardiogram. R. Langendorf and B. Kovitz, Chicago.—p. 239.
Aneurysm of Coronary Artery. H. D. Chipps, Montreal, Canada.—p. 246.
Note on Development of Cutaneous Arterial "Spiders" and Palmar Erythema in Persons with Liver Disease and Their Development Following Administration of Estrogens. W. B. Bean, Cincinnati.—p. 251.
*Prolonged Effect of Amphetamine Sulfate in Gelatin. A. Myerson, M. Rinkel, J. Loman and M. Ritvo, Boston.—p. 254.
*Treatment of Underweight with Insulin. J. B. Greco, A. O. Lima and J. R. Cançado, Belo-Horizonte, Minas Geraes, Brazil.—p. 258.
Inheritance of Diabetes Insipidus. H. Blotner, Boston.—p. 261.
Intramuscular Pressure: I. During Postoperative Depression. L. Gunther, H. Engelberg and L. Strauss, Los Angeles.—p. 266.
Id.: II. Venopressor Mechanism in Shocklike Conditions and Effects of Various Drugs. L. Gunther, H. Engelberg and L. Strauss, Los Angeles.—p. 271.

**Rheumatic Heart Disease Complicating Pregnancy.**—From 1931 to 1940 there were sixty-one maternal deaths due to rheumatic heart disease, which constitutes the principal type of heart disease in women of childbearing age. During this time there has been a steady decline from seven and nine tenths deaths per thousand live births in 1931 to three and one tenth in 1940. The study shows that every gravid woman with organic heart disease represents a potential fatality from her cardiac lesion and therefore requires special care during her pregnancy. The fatalities were principally due to congestive heart failure following delivery at or near term. Hoffman and Jeffers state that, if there is to be a significant decrease in the maternal death rate among cardiac patients permitted to attempt childbearing, it must come through the prevention of congestive failure, which prior to delivery is largely a problem of antepartum care and after delivery is directly related to the cardiac status at the time of delivery. Almost 50 per cent of the postpartal deaths occurred among women who were decompensated at the time of labor or when termination of the pregnancy was undertaken. The burden of labor on congestive failure deserves further study. The emptying of the uterus is the primary factor precipitating death. The emptying and subsequent contraction of the uterus forces blood from the large uterine vessels and sinuses into the general circulation, which seemingly cannot be properly distributed by a damaged heart. Since the cardiac burden imposed by labor does not appear to be critical, it would seem that vaginal delivery is preferable for most cardiac patients without obstetric complications. The mortality rate due to rheumatic heart disease complicating pregnancy can possibly be lowered by having the patients at delivery in the best possible condition, by immediate therapy of intercurrent infection, by hospitalization prior to expected delivery, by partial digitalization prior to delivery and by deferment of delivery, if possible, while the

patient is decompensated. Postpartum signs of decompensation must be anticipated and proper treatment instituted. Fluids intravenously should be avoided, particularly within the first twenty-four postpartum hours, since they may precipitate congestive failure.

**Sulfadiazine in Pneumonia.**—Ensworth and his colleagues used sulfadiazine for the treatment of 239 patients with pneumonia. Twenty-six patients died, giving a fatality rate of 10.9 per cent. Eight of the deaths occurred in less than twenty-four hours after treatment was instituted. The most striking results were obtained in 42 patients with type II pneumonia, of whom only 3 died, 2 less than twenty-four hours after treatment was started. Thirteen of the 42 had bacteremia and all but 2 recovered. Division of the cases according to the time sulfadiazine therapy was commenced shows that of 108 patients treated within the first three days of onset only 7 died (6.5 per cent; 1 twenty-four hour death is excluded) and that of those treated on the fourth day or later 11 died (8.9 per cent; 7 twenty-four hour deaths are excluded). The effectiveness of sulfadiazine appears to be the same as that of sulfapyridine and sulfathiazole.

**Effect of Amphetamine Sulfate in Gelatin.**—A gelatin solution of amphetamine sulfate for parenteral introduction was used by Myerson and his co-workers to prolong the effects of the drug by delaying its absorption. Its effects, as compared to an aqueous solution, revealed the following: 1. The increase in blood pressure and the corresponding decrease in pulse rate produced by amphetamine was not delayed or prolonged when the drug was dissolved in gelatin. 2. There was a definite prolonged decrease in gastrointestinal tone and peristalsis when the drug was mixed with gelatin. 3. The delay in the absorption of alcohol which follows the administration of amphetamine sulfate was also definitely more pronounced.

**Treatment of Underweight with Insulin.**—In treating 30 underweight patients Greco and his associates used insulin with most satisfactory results. They injected insulin once a day, beginning with 8 units and increasing according to the patient's appetite on the previous day; a dose of 30 units was never exceeded. The drug was administered about forty-five minutes before the noon meal, but the patients were advised to eat when they begin to feel hungry. When a sufficient gain in weight was attained the administration of insulin was gradually discontinued. In this way the stimulus to the pancreas was gradually restored, so that if it was spared during treatment it regained its function progressively. The administration of insulin only once a day and its gradual discontinuance protects the endocrine function of the pancreas. Glycosuria was not encountered. The unanimous statement of the patients was that they ate "as never before in their life." That the effect of the pancreatic hormone was not psychic was demonstrated by injecting sterilized isotonic solution of sodium chloride instead of insulin; the result was that all the patients thus treated lost their appetite. When they were returned to insulin their appetite again improved.

## American Journal of Ophthalmology, Cincinnati

**25**:911-1028 (Aug.) 1942

Recession of Trochlea in Overaction of Superior Oblique. W. L. Hughes, Hempstead, N. Y., and D. W. Bogart, New York.—p. 911.
Lymphogranuloma Venereum Lesions of Eyes. C. Espildora and W. E. Coutts, Santiago, Chile.—p. 916.
Epithelial Tumors of Limbus. J. E. Ash and Helenor Campbell Wilder, Washington, D. C.—p. 926.
*Tetanus Following Eye Injury: Report of Case, Review of Literature. J. O. Wetzel, Lansing, Mich.—p. 933.
Comparison of Cases of Atypical and Typical Achromatopsia. Louise L. Sloan and S. M. Newhall, Baltimore.—p. 945.
Five Hundred Melanomas of Choroid and Ciliary Body Followed Five Years or Longer. G. R. Callender, Helenor Campbell Wilder and J. E. Ash, Washington, D. C.—p. 962.
Chronic Ophthalmoplegia Externa; Classification of Causes: Report of Case. I. D. Fagin, Detroit.—p. 968.
Experimental Transposition of Extraocular Muscles in Monkeys: Role of Superior Oblique. P. J. Leinfelder and N. M. Black Jr., Iowa City.—p. 974.

**Tetanus Following Eye Injury.**—A case of tetanus following injury to the eye is reported by Wetzel, who stresses that although prophylactic antitoxin was administered at the outset the classic syndrome of cephalic tetanus supervened. In the literature 30 cases of head tetanus have been reported. In most instances the causal factor was an object immediately associated with horses or with earth which could easily have been contaminated with the excrement of horses. Only 6 of the 30 patients survived. Tetanus antitoxin was administered to all who recovered, suggesting that it may be advisable to administer it as a routine in injury to the eye. The author's case supports this recommendation. A farmer had a ricocheting nail strike him in the left eye. That same day he was given a prophylactic injection of 1,500 units of antitoxin. The prolapsed iris was excised under local anesthesia, the wound repaired and a pressure bandage applied. The patient was discharged on the eighth day. He returned four days later with evidence of tetanus. Intensive antitoxin therapy was instituted. On the seventh day of his second hospitalization a stormy convalescence began and not until twenty-six days after the original injury was it deemed wise to remove the left eye. Convalescence from this operation was uneventful.

## American Journal of Public Health, New York

**32**:793-946 (Aug.) 1942

Epidemiology of Syphilis Based on Five Years' Experience in an Intensive Program in New York State. W. A. Brumfield Jr., J. H. Lade and L. L. Feldman, Albany, N. Y.—p. 793.
Use of Vital Records in Reduction of Fetal, Infant and Maternal Mortality: Operative Procedures for Delivery and Their Effects on Neonatal and Maternal Mortality. T. J. Duffield and L. Weiner, New York.—p. 803.
Health Education in Mexico. A. de La Garza Brito, Mexico, D. F., Mexico.—p. 811.
Local Responsibility for Housing Control. C. L. Senn, Milwaukee.—p. 816.
Epidemiology of Lye Poisoning in the United States. H. W. Brown, Chapel Hill, N. C., and G. Kiser, Durham, N. C.—p. 822.
Public Health Planning for War Needs: Order or Chaos? Frances Sullivan and M. Rose, Philadelphia.—p. 831.
Integrating Mental Hygiene in Countywide Health Service. V. H. Vogel, Washington, D. C.—p. 837.
Experience with Test for Vi Agglutinative Properties for Eberthella Typhosa. M. B. Coleman, Albany, N. Y.—p. 843.
U. S. Public Health Service Restaurant Sanitation Program. A. W. Fuchs, Washington, D. C.—p. 848.
Engineering Health Services for Small Plants. J. Buxell, St. Louis.—p. 853.
Medical Services in Small Industrial Plants. C. Pharris, Hartford, Conn.—p. 860.

## Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

**48**:1-140 (July) 1942

Roentgenologic Appearance of Extramucosal Tumors of Esophagus: Analysis of Intramural Extramucosal Lesions of Gastrointestinal Tract in General. R. Schatzki and L. E. Hawes, Boston.—p. 1.
Roentgen Diagnosis of Lesions Involving Ileum, Cecum and Proximal Ascending Colon. E. P. Pendergrass, Philadelphia, and G. W. Chamberlin, Reading, Pa.—p. 16.
Lymphoblastoma Primary in Gastrointestinal Tract. H. M. Weber, B. R. Kirklin and D. G. Pugh, Rochester, Minn.—p. 27.
*Roentgenologic Study of Low Back and Sciatic Pain. E. A. Brav, S. Bruck and J. M. Fruchter, Philadelphia.—p. 39.
Multiple Primary Hemangioma of Bones of Extremity. A. J. Ackermann and M. S. Hart, Oklahoma City.—p. 47.
Comparative Study of Normal Lung Image by Teleroentgenography and Roentgen Kymography. C. G. del Campo, Mexico, D. F., Mexico.—p. 53.
*Treatment of Cancer of Skin of Nose. G. A. Robinson and J. H. Harris, New York.—p. 59.
*Treatment of Epithelioma of Skin of Ear. J. R. Driver and H. N. Cole, Cleveland.—p. 66.
Epithelioma of Lip Metastatic to Vertebra: Report of Two Cases. A. F. Tyler, Omaha.—p. 76.
Aspiration and Surgical Biopsy. C. Sayago, Santiago, Chile.—p. 78.
Late Effect of High Voltage Roentgen Rays on Heart of Adult Rats. J. E. Leach and K. Sugiura, New York.—p. 81.
Studies in Roentgenographic Exposure Meter Design. R. H. Morgan, Chicago.—p. 88.

**Low Back and Sciatic Pain.**—Brav and his associates compared roentgenologic appearances in 70 cases of low back and sciatic pain with those in 35 control subjects with no symptoms. 1. Normal roentgenograms, vertebral epiphysitis and osteochondritis, narrowing of the intervertebral disks (except the fifth lumbar) and vertical herniation of the nucleus pulposus were encountered in similar proportions in the two groups. 2. Lumbosacral anomalies were present in 48.5 per cent of both groups. 3. Lumbarization of the first sacral segment and sacralization of the fifth lumbar vertebra were noticed almost entirely in females. 4. Hypertrophic arthritis of the spine was twice as frequent among those with backaches. 5. Scoliosis

and increased lumbar lordosis were twice as frequent and flattening of the lumbar spine six times as often in the backache cases. 6. There was no direct relationship between the clinical diagnosis and the areas on the roentgenograms showing the most definite abnormality. 7. Lumbar abnormalities were four times as frequent and lumbosacral abnormalities four and a half times as frequent in the group with backaches. 8. Sacroiliac changes were present in the roentgenograms of 6 of the backache cases and in none of the controls. 9. The oblique films of the articular facets of the two series revealed no information of diagnostic importance. 10. There were 4 patients with posterior displacement of the fifth lumbar vertebra in the backache group and none among the controls. 11. Narrow posterior disk measurement was observed in 20.6 per cent of the backache cases and in 5.7 per cent of the controls. This was much more frequent in patients more than 30. There was no relationship between narrow posterior disk measurement and the incidence of radiating leg pain. 12. Narrow anterior disk measurement was about equal in the two groups and was probably of little significance unless the posterior disk measurement was also narrowed. 13. The disk angle and the lumbosacral angle measurements showed no significant differences in the two groups. 14. Narrow posterior fifth lumbar disk measurement and posterior displacement of the fifth lumbar vertebra as recognized on the roentgenogram appeared to be definite etiologic factors in the production of low back and sciatic pain.

**Treatment of Cancer of Skin of Nose.**—Robinson and Harris state that in their 146 cases of cancer of the skin of the nose the results were satisfactory in all but 12 advanced cases following single massive or divided doses of roentgen rays and/or radium with or without surgery or electrodesiccation.

**Treatment of Epithelioma of Skin of Ear.**—The results of the roentgen treatment of 130 cases of epithelioma of the skin of the ear are reported by Driver and Cole. The cases represent an incidence of 5.5 per cent of a total of 2,364 cases of cutaneous epithelioma treated during twenty-five years. The age incidence, average 64.3 years, corresponds to that of cutaneous epithelioma in general. There were 96 men and 34 women. The treatment cannot be standardized. Many cases that formerly would have been considered hopeless are now successfully treated with the modern technic of employing radium and roentgen rays. Divided doses of roentgen rays were used for 27, interstitial gamma irradiation with low intensity, heavily filtered radium needles in 10, gamma irradiation in cases in which cartilage was involved, electrodesiccation and curettage or electrocautery and curettage alone or combined with surface irradiation in 66 patients, the unfiltered glass radon bulb for keratosis and early superficial epitheliomas, for primary involvement of the external auditory canal radical surgery or thorough destruction with the electrocautery or electrocoagulation followed in some instances by radiation therapy and for melanoepithelioma thorough destruction or radical excision. There were 44 patients who had suffered recurrences following previous treatment and 10 who had recurrences following treatment given by the authors. Recurrence usually results from insufficient treatment and often seriously complicates further therapy because of metastasis or cancer cells in scar tissue. Seven patients had metastasis; 1 of them with involvement of the postauricular node has remained well for more than eight years after receiving 840 millicurie hours of interstitial irradiation with low intensity radium needles, in 2 direct extension from infiltrating overlying cancer involved the preauricular node and treatment by interstitial radium needles effected a cure in both and in 5 the cervical nodes were involved and all have died as a result of cancer. Of the 130 cases 107 have been followed for more than one year; 37 have remained cured for more than five years, 24 for three to five years and 46 for one to three years. Of the 107, 9 are known to have died of metastasis or of uncontrolled spread of the growth. There were also 4 who died of cancer in less than one year, leaving 94 with possible cures of one to five or more years. The results compare favorably with those obtainable with epithelioma of other areas of the skin.

## Archives of Dermatology and Syphilology, Chicago

**46**:187-336 (Aug.) 1942

Neurotic Symptoms and Emotional Factors in Atopic Dermatitis. M. H. Greenhill and J. E. Finesinger, Boston.—p. 187.
*Primary Lesions of Pemphigus Vulgaris. M. Oppenheim and D. Cohen, Chicago.—p. 201.
*Unilateral Roentgen Irradiation in Treatment of Acne Vulgaris. P. R. Kline and E. Gahan, New York.—p. 207.
Sporotrichosis: Report of Case in Which It Was Resistant to Treatment. L. F. Ray, Portland, Ore., and Ethel M. Rockwood, Boston.—p. 211.
*Bullous Dermatitis Herpetiformis. M. H. Goodman, Baltimore.—p. 218.
So-Called Myoblastoma: Report of Three Cases of Myoblastoma of Skin and One Case of Myoblastoma of Trapezius Muscle. J. A. Tuta and F. R. Schmidt, Chicago.—p. 225.
Epidermodysplasia Verruciformis (Lewandowsky-Lutz): Report of Case with All Essential Features. A. Sayer and J. Schweig, New York.—p. 234.
Lupus Serpiginosus with Elephantiasis: Treatment with Electrocoagulation and Surgical Excision: Report of Case. T. Butterworth and C. F. Freed, Reading, Pa.—p. 242.
Pemphigus of Eye. C. Halloran, Los Angeles.—p. 246.
Vulvovaginocervical Eruption Due to Therapy with Gold Sodium Thiosulfate. D. N. Barrows and E. T. R. Stone, New York.—p. 250.
Dermatitis from Underwear Shorts Processed by Resin Finishes: Report of Twenty Cases Observed at Bellevue Hospital. M. J. Costello, New York, and J. E. Ryan, Binghamton, N. Y.—p. 254.
Congenital Defect of Scalp. N. P. Anderson, Los Angeles, and F. G. Novy Jr., Oakland, Calif.—p. 257.
Frei Test: Evaluation of Chick Embryo Antigen (Lygranum). F. C. Combes, O. Cañizares, New York, and G. Morris, Boston.—p. 264.
Respiration of Human Keratoses and Epitheliomas. J. C. Amershach, Elsie M. Walter, New York, and E. S. Cook, Cincinnati.—p. 269.
Osteosis Cutis in Methylcholanthrene Epidermal Carcinogenesis in Mice. R. E. Stowell and W. Cramer, St. Louis.—p. 276.

**Primary Lesions of Pemphigus Vulgaris.**—In the 3 cases of pemphigus vulgaris that Oppenheim and Cohen report the condition began with a localized lesion that occurred prior to the generalized eruption and was resistant to therapy. In case 1 it began three months before with a burn on the flexor surface of the right elbow joint, where blisters and crusts formed in spite of treatment. The generalized rash of bullae and vesicles developed into malignant pemphigus vegetans. In case 2 three months prior to the generalized eruption several blisters appeared on the center of the scalp and did not heal. In case 3 the condition began with a crusting eruption of the scalp followed in two months by a generalized bullous eruption on the body. The condition in cases 2 and 3 was of the benign type, as was shown by the appearance of bullae on otherwise normal skin. The lesions in case 2 healed with the formation of many sebaceous and horny cysts, as do those of epidermolysis bullosa hereditaria. In case 3 the Nikolsky sign was present and the reaction to the iodine test was negative. With these findings a diagnosis of dermatitis herpetiformis of Duhring is not tenable.

**Roentgen Irradiation in Acne Vulgaris.**—Kline and Gahan treated one side of the face of 50 random patients who had acne vulgaris with ten exposures to one fourth of an erythema dose (75 roentgens) of unfiltered roentgen rays at intervals of one week. Thirteen patients discontinued attendance, 1 had an erythema and therapy was stopped, and another had rosacea and showed no improvement. Twenty patients showed as much improvement on the treated as on the untreated side, 9 showed improvement only on the treated side, and 6 showed no improvement on either side. The scarring produced by the acne was no greater on the treated than on the untreated side. This confirms the opinion that safe therapeutic doses of roentgen rays are no more likely to increase scarring than any other method of treatment. The good results cannot be attributed solely to a functional atrophy of the sebaceous glands; the rays must have another still undetermined effect.

**Bullous Dermatitis Herpetiformis.**—During five years Goodman encountered 15 patients with a bullous type of dermatitis herpetiformis. Only 5 were less than 50. Although the eruption may be extensive there is a greater tendency toward localization than in typical dermatitis herpetiformis and also toward annular grouping of the bullae. The bullous elements coalesce to form peculiar inflammatory plaques at the periphery and where fresh bullae continue to form. The condition usually responds well to arsenical therapy; in combination with other general measures an apparent cure was affected in at least 3 cases. Vitamin D seems to have some value in controlling

the disease. Because of its special features and the tendency for lesions to develop in the flexures and intertriginous areas the disease apparently has often been mistaken for pemphigus. However, pemphigus occurs most frequently in persons between 20 and 50 years. It is suggested by the author that all cases, especially occurring around the age of 50, previously recorded as instances of controlled or cured pemphigus should be reviewed in the light of his present observations.

## Archives of Neurology and Psychiatry, Chicago

**48:**163-354 (Aug.) 1942

Metastatic Tumors of Brain. J. H. Globus and T. Meltzer, New York.—p. 163.
Cortical Reorganization of Motor Function: Studies on Series of Monkeys of Various Ages from Infancy to Maturity. Margaret A. Kennard, New Haven, Conn.—p. 227.
Pathology of Senile Brains: I. Silver Reducing Structures in Hippocampus. L. S. King, Newtown, Conn.—p. 241.
Delayed Traumatic Intracerebral Hemorrhage. R. N. DeJong, Ann Arbor, Mich.—p. 257.
Curare and Metrazol Therapy of Psychoses: Report of Fatal Case. G. E. Charlton, W. C. Brinegar and O. R. Holloway, Norfolk, Neb.—p. 267.
Pathologic Anatomy of Human Nervous System in Avitaminosis. H. Ying-K'Uei, Peiping, China.—p. 271.
*Complication of Paravertebral Injection of Alcohol: Report of Case. F. J. Hirschboeck and M. G. Gillespie, Duluth, Minn.—p. 320.

**Complication of Paravertebral Injection of Alcohol.**—A third disastrous complication following the accidental injection of alcohol either into the spinal cord or intrathecally instead of paravertebrally for the relief of angina pectoris is reported by Hirschboeck and Gillespie, whose patient thirteen months after the injection had all component motions in the left leg but still had difficulty in stabilizing himself on standing and walking. Dissociation of sensation was present on the right side up to the crest of the ilium. To prevent complications, suction on the syringe to make certain that the needle is not in the spinal canal and observation of the sensory and motor function of the lower extremities after injection should always be carried out.

## Canadian Public Health Journal, Toronto

**33:**315-364 (July) 1942

Our Wartime Health: Presidential Address. J. J. McCann, Renfrew, Ont.—p. 315.
Canadian Nutrition Program. L. B. Pett, Ottawa, Ont.—p. 320.
Method for Concentration of Influenza Virus. R. Hare, Laurella McClelland and Jean Morgan, Toronto.—p. 325.
Necessity for Microfilming British Columbia's Vital Records. J. D. B. Scott, Victoria, B. C.—p. 332.
Incidence of Types of Bacillus Typhosus in Ontario. Vera M. Crossley, Toronto.—p. 337.
Occurrence of Enterobius Vermicularis in Appendix. E. Kuitunen-Ekbaum and E. M. Morgan, Toronto.—p. 340.

## Endocrinology, Springfield, Ill.

**31:**1-146 (July) 1942. **Partial Index**

Effect of Early Hypophysectomy on Hypothalamic Obesity. A. W. Hetherington and S. W. Ranson, Chicago.—p. 30.
Balance Studies in Hypophysectomized and Normal Rats Fed on Equicaloric High Carbohydrate and High Fat Diets. L. T. Samuels, R. M. Reinecke, Minneapolis, and H. A. Ball, San Diego, Calif.—p. 35.
Effect of Diet on Glucose Tolerance and Liver and Muscle Glycogen of Hypophysectomized and Normal Rats. L. T. Samuels, R. M. Reinecke, Minneapolis, and H. A. Ball, San Diego, Calif.—p. 42.
Pituitary Weight in Growing New Zealand White Rabbits in Relation to Live Weight. H. H. Kibler, A. J. Bergman and C. W. Turner, Columbia, Mo.—p. 59.
Estrogens, Blood Sugars and Liver Glycogen in Normal and Hypophysectomized Guinea Pigs. R. T. Hill and W. W. Stalker, Bloomington, Ind.—p. 89.
Effects of Crystalline Estrin Implants on Tibia of Young Hypophysectomized Female Rats. E. A. Kibrick; Miriam E. Simpson, Berkeley, Calif.; H. Becks, San Francisco, and H. M. Evans, Berkeley, Calif.—p. 93.
Noneffect of Hysterectomy on Mammary Gland of Monkey. H. Speert, Baltimore.—p. 97.
Effect of Vitamin B Complex Deficiency on Inactivation of Estrone in Liver. M. S. Biskind, New York, and G. R. Biskind, San Francisco.—p. 109.
Immunologic Identity of Insulin from Various Species. P. Wasserman and I. A. Mirsky, Cincinnati.—p. 115.
Mammary Growth in Male Mice Fed Desiccated Thyroid. W. U. Gardner, New Haven, Conn.—p. 124.
Sesame Oil as Vehicle for Fat Soluble Hormones. R. C. Crafts, New York.—p. 142.

## Georgia Medical Association Journal, Atlanta

**30:**261-306 (July) 1942

Nutrition in a State Health Program. T. F. Abercrombie, Atlanta.—p. 261.
Community Public Health. G. G. Lunsford, Atlanta.—p. 264.
Teaching of Public Health in Medical School. E. S. Sanderson, Augusta.—p. 267.
Public Health Education for Laymen. J. Andrews, Atlanta.—p. 269.
Industrial Health in Georgia. L. M. Petrie, Atlanta.—p. 271.
Public Health and National Defense. J. D. Applewhite, Macon.—p. 274.
Organized Cancer Clinic and State Aid in Georgia. G. T. Bernard, Augusta.—p. 276.
Syphilis in Georgia. H. A. Nevel, Atlanta.—p. 298.
Industrial Nursing. Margaret Currie, Gainesville.—p. 299.

## Indiana State Medical Assn. Journal, Indianapolis

**35:**401-450 (Aug.) 1942

Health in Industry. M. Fishbein, Chicago.—p. 401.
Some Occupational Diseases Associated with War Production Program. L. W. Spolyar and J. W. Ferree, Indianapolis.—p. 402.
Fatigue Problem in Industry. S. D. Piatek, East Chicago.—p. 407.
Industrial Health in Wartime. C. M. Peterson, Chicago.—p. 410.
Occupational Diseases: Few Practical Points. J. V. Reed and A. K. Harcourt, Indianapolis.—p. 412.
Problems in Wartime Industrial Practice. N. K. Forster, Hammond.—p. 416.
Indiana Coal Mine Accidents. J. B. Maple, Sullivan.—p. 421.

## Iowa State Medical Society Journal, Des Moines

**32:**355-400 (Aug.) 1942

Differential Diagnosis of Meningeal Irritations. J. A. Toomey, Cleveland.—p. 355.
Differential Diagnosis of Jaundice. J. S. McQuiston, Cedar Rapids.—p. 360.
Injuries. W. R. Cubbins, Chicago.—p. 364.
Compound Fractures and Complications. D. C. Wirtz, Des Moines.—p. 365.
Nerve Injuries. E. H. Files, Cedar Rapids.—p. 367.
Head Injuries. A. I. Haugen, Ames.—p. 370.
Chest Injuries. G. P. Elvidge, Perry.—p. 375.

## Journal of Allergy, St. Louis

**13:**431-536 (July) 1942

Skin Reactions: XV. Quantitative Studies of Whealing. H. A. Abramson, M. G. Engel and H. H. Gettner, New York.—p. 431.
Inhalant Sensitization and Shock in Guinea Pigs Under Controlled Atmospheric Conditions: II. Histamine, Histaminase and Acetylcholine as Possible Preventives. L. J. Courtright, S. H. Hurwitz and Abbie Betts Courtright, San Francisco.—p. 444.
*Active Sensitization in Human Beings with Trichina Antigen. Bessie Baron and M. Brunner, Brooklyn.—p. 459.
Experimental Reproduction of Gastric Allergy in Human Beings with Controlled Observations on Mucosa. H. M. Pollard, Ann Arbor, Mich., and G. J. Stuart, Washington, D. C.—p. 467.
Apparatus for Determining Pollen Content of Air and Notes on Pollen Survey Methods. R. C. Hawes, W. S. Small and H. Miller, Los Angeles.—p. 474.
*Vegetable Milk Substitute: Taro. B. F. Feingold, Los Angeles.—p. 488.

**Active Sensitization with Trichina Antigen.**—Baron and Brunner tried to determine whether the cutaneous test doses of Trichina antigen used as a diagnostic aid in detecting Trichinella infection can sensitize patients to this antigen. If this was possible, it seemed desirable to study the immunologic mechanism involved and the relationship of the sensitiveness of Trichinella spiralis and Ascaris lumbricoides. The study was made on three groups of 6 atopic subjects who were attending the allergy clinic for the treatment of various allergic illnesses. The subjects were first tested intracutaneously with 0.01 cc. of Trichina antigen, and only those giving negative reactions were used. Injections of 0.1 cc. were then given at intervals of one to two weeks for four to twenty weeks. Cutaneous reactions were read within fifteen minutes after testing. With the development of hypersensitiveness a positive reaction ensued. It consisted of an erythema and an itch which appeared about five minutes after the injection. Wheal formation then followed. In 10 of the 18 subjects, sensitivity, as indicated by definite wheal and erythema formation, was induced; at least 1 plus intensity occurred with the third sensitizing dose in 2, with the fourth in 1, with the fifth in 3, with the sixth in 1, with the seventh in 1, with the eighth in 1 and with the ninth in 1; in 2 doubtful reactions, never more than a ± in intensity, were obtained. The cutaneous reaction in sensitivity to Trichinella spiralis was mediated by the atopic reagin and was transferable to the normal skin. A

common antigen exists in Ascaris and Trichina antigens. It is probably stronger in the ascaris than in the Trichina extract, even though the Trichina antigen transfers better on Trichina serums. It should be remembered that the diagnostic value of the Trichina tests diminishes on repetition.

**Vegetable Milk Substitute.**—As a result of investigations by the Ewa Health Project and the United States Department of Agriculture a dehydrated taro meal has been made available which retains in a large measure the natural attributes of the freshly cooked taro root, one of the oldest economically important foods known to man. Feingold offers the following taro recipe as an addition to the small group of vegetable milk substitutes already available for children sensitive to milk: 20 Gm. (5½ teaspoons) of pyo meal (taro), 4 Gm. of clear gelatin, 10.8 Gm. of vegetable oil, 7.5 Gm. of corn syrup, 2 Gm. of calcium gluconate, 2.4 Gm. of sodium chloride and water to make 240 cc. The ingredients are cooked over the direct flame for three minutes. After cooking the original volume is restored by adding water. At the current market prices a quart (1,000 cc.) of the formula costs 11 to 13 cents.

## Military Surgeon, Washington, D. C.

**91**:129-256 (Aug.) 1942. **Partial Index**

Some Recent Research in Field of Neurotropic Viruses, with Especial Reference to Lymphocytic Choriomeningitis and Herpes Simplex. C. Armstrong.—p. 129.
Army Tuberculosis Admissions During 1941. W. C. Pollock.—p. 147.
Medical Replacement Training Center, Camp Grant, Ill. W. E. Looby. —p. 157.
Penetrating Knife Wounds of Abdomen. E. L. Rippy.—p. 161.
Observations on First Six Months of General Surgical Section of Fifteen Hundred Bed Cantonment Type Station Hospital at Fort Leonard Wood, Mo. W. F. Bowers.—p. 170.
Too Many Tonsillectomies! L. K. Emenhiser.—p. 182.
Treatment of Painful Feet in the Army. L. N. Coren.—p. 196.
Arthropathic Psoriasis. A. G. Franks and J. J. Wallace.—p. 199.
Trichinosis. J. S. Diasio and J. R. Gannon.—p. 206.
Local Treatment of Burns in the Army. N. W. Thiessen and O. S. Steinreich.—p. 208.
Plaster Nasal Splint. H. H. Parsons.—p. 212.
Mobile Skeletal Traction for Severe Leg Injuries. W. H. Gerwig Jr. —p. 213.

## Minnesota Medicine, St. Paul

**25**:601-680 (Aug.) 1942

Sickness as an Insurable Hazard. M. F. Cahal, Chicago.—p. 611.
Associated Medical Service of Toronto. J. A. Hannah, Toronto, Canada. —p. 616.
Study of Osteoporosis by Means of Controlled X-Rays of Bones: Part II. R. S. Ylvisaker and E. L. Gardner, Minneapolis.—p. 625.
Teratomatous Chorionepithelioma of Ovary: Critical Review of Literature, with Report of New Case. R. F. Sturley, Minneapolis.—p. 629.
Interauricular Septal Defect. W. S. Tinney and A. R. Barnes, Rochester.—p. 637.

## Nebraska State Medical Journal, Lincoln

**27**:265-300 (Aug.) 1942

Acute Nasal Infection. O. E. van Alyea, Chicago.—p. 265.
Procurement and Assignment Service. S. F. Seeley, Washington, D. C. —p. 275.
Treatment of Infantile Paralysis. J. E. M. Thomson, Lincoln.—p. 283.
Clinical Use of Estrogenic Compounds. Olga Stastny, Omaha.—p. 286.
Sanitation Activities in Defense Areas. T. A. Filipi, Lincoln.—p. 288.

## New England Journal of Medicine, Boston

**227**:121-158 (July 23) 1942

Cesarean Section in Massachusetts in 1940. R. L. DeNormandie, Boston.—p. 121.
*Treatment of Psoriasis with Sarsaparilla Compound. F. M. Thurmon, Boston.—p. 128.
Mechanism for Syncopal Attacks Associated with Paroxysmal Auricular Fibrillation. W. J. Comeau, Bangor, Maine.—p. 134.
Physiology. H. E. Hoff, New Haven, Conn.—p. 136.

**227**:159-202 (July 30) 1942

Problem of Certain Tropical Diseases in the War. H. E. Meleney, New York.—p. 159.
Present Program for Immunization of Military Personnel. J. F. Enders, Boston.—p. 162.
World Conflict and Medical Service. J. M. Pratt, Chicago.—p. 166.
Massive Hematuria of Renal Origin. G. C. Prather, Boston.—p. 169.
Diabetes Mellitus. E. P. Joslin and H. F. Root, Boston.—p. 175.

**Treatment of Psoriasis with Sarsaparilla Compound.**—During the last two years Thurmon administered sarsasaponin tablets to 75 patients with psoriasis and as a control employed a dietary regimen and local therapy for 17 others. The sarsasaponin tablets must be taken regularly for three to seven months. The usual adult dose is one tablet twice a day, preferably taken with a warm liquid at a time when the stomach is most likely to be empty. A diet low in fat will prove beneficial to many patients. The tablets used were about one fifth as concentrated as those commercially available at present. The clearance was 100 per cent in 14 patients, 75 per cent in 16, 50 per cent in 17 and 25 per cent in 12; there was no improvement in 14 and there was an exacerbation in 2. Of the control patients 1, 1, 2, 3, 7 and 3 patients had corresponding results. The author concludes that sarsasaponin is worthy of clinical trial in any case of psoriasis. There were no toxic systemic effects from its use. The appetite of many patients increased; they gained weight and seemed less nervous, slept better and experienced less itching. Three women took the sarsasaponin during pregnancy without ill effect, and their psoriasis improved. The drug appeared to have a greater value in clearing the chronic, large, plaque type of lesion than it had in controlling the recurrent evanescent and exanthematous punctate, nummular and guttate lesions. The newly recurrent eruption was milder, but it did appear despite the medication. A history of familial incidence was obtained from 15 patients. In contrast, 53 were the parents of 121 children, none of whom had psoriasis. This indicates that psoriasis is not a deterrent to marriage and the begetting of progeny.

## Review of Gastroenterology, New York

**9**:257-334 (July-Aug.) 1942

Limitations of Gastroscopy. I. R. Jankelson and C. W. McClure, Boston.—p. 257.
Alkalosis and Gastric Tetany Due to Prolonged Vomiting After a Finney Pyloroplasty. A. O. Wilensky, New York.—p. 261.
Transthoracic Partial Gastrectomy for Carcinoma High in Stomach. R. H. Sweet, Boston.—p. 264.
Diagnosis of Gastric Disorders by Excretion of Dyes. C. L. Gluessner, New York.—p. 269.
Improved Technic of Hemorrhoidectomy. H. E. Bacon, Philadelphia. —p. 276.
Mesenteric Cysts. I. Kroos, New York.—p. 281.
Treatment of Spastic Colon and Chronic Idiopathic Ulcerative Colitis with Syntropan: Preliminary Report. S. D. Weston, Brooklyn.—p. 285.
Massive Ulcer Hemorrhage: Its Nature and Management. E. Boros, New York.—p. 294.
*Calcium Therapy in Bacillary Dysentery, with Particular Reference to Children and Infants. L. H. Block and A. Tarnowski, Dixon, Ill. —p. 300.
Early Diagnosis of Cancer of Stomach: Report of Three Cases. S. Jonas, New York.—p. 308.
New Proctosigmoidoscope. A. J. Cantor, Flushing, N. Y.—p. 313.
Cholelithiasis: Necropsy Study. N. Blumberg and L. Zisserman, Philadelphia.—p. 318.
Left Lower Abdominal Pain in Gallbladder Diseases. B. Kaplan, New Bedford, Mass.—p. 320.

**Calcium Therapy in Bacillary Dysentery.**—Block and Tarnowski compared the effect of calcium administered parenterally and orally to children and infants with bacillary dysentery with that of belladonna, bismuth subcarbonate, kaolin and insulin. Twenty-nine were males and 20 females from 10 months to 55 years; 32 between 2 and 8 years received calcium, and in the control group 19 were males and 13 females from 9 months to 60 years; 28 were from 9 months to 9 years of age. The morbidity of patients on calcium treatment ranged from five to one hundred and fifty days for the male and four to one hundred and fifty days for the female; the respective averages were thirty-nine and one-tenth and forty-one and one-tenth days, but 58.8 per cent of all patients on calcium were discharged within thirty days as against only 35.3 per cent of the control patients. The results of the study justify the conclusion that calcium is effective even when not supplemented by other drugs, vitamins or hormones. However, its action can be greatly enhanced by vitamin D and the condition of the bowel relieved by the addition of kaolin. In the control series at the beginning of the study the proctoscopic examination of 11 was negative, of 9 impacted, of 2 ulcerated and of the remainder hyperemic. With the exception of 2 patients who died, none were acutely ill. At the expiration of the investigation the study of 25 was negative but only 21 were discharged; ulceration was still present in 1 and 10 were continued to be held in isolation. In contrast, in the calcium group the study of 14 was negative and showed impaction in

4, ulceration in 5 and hyperemia of various degrees in the rest. At the end of observation, the study was negative in 34 and they were discharged; 10 were returned to isolation and 1 died. Calcium resulted in the recovery of every patient with an ulcer.

## Rhode Island Medical Journal, Providence

**25**:151-172 (July) 1942

Medical Rationing. C. F. Gormly, Providence.—p. 151.
The Practitioner and the Allergy Problem, with Special Reference to Respiratory Allergy. R. A. Cooke, New York.—p. 152.
Closing the Doctor's Mouth on the Witness Stand. Z. Chafee Jr., Boston.—p. 157.

## Rocky Mountain Medical Journal, Denver

**39**:533-596 (Aug.) 1942

War and Suprarenals. W. G. Richards, Billings, Mont.—p. 550.
*Anal Infection. J. P. Nesselrod, Evanston, Ill.—p. 555.
Gastrointestinal Tract Disorders as Manifestations of Personality Difficulties. E. G. Billings, Denver.—p. 556.
Alcoholism—Medical Problem. M. Moore, Denver.—p. 564.

**Anal Infection.**—Nesselrod explains anal infection on the basis of a chain of events which occur in the pathogenesis of anorectal inflammatory disease. Infectious intestinal material, especially when it is soft or liquid, can easily gain entrance into one or more anal crypts. The tiny, vestigial anal ducts which lead from the bottom of the crypt to rudimentary glandular follicles afford excellent ports of entry. The lymphatics probably play an important role in anal infection. An underlying etiologic factor of which the profession does not seem to be aware is that anal infection provides the first step in the development of the phlebitis which underlies hemorrhoidal disease. It takes part in the development of anal fissure, abscess, fistula and related conditions; that is, these common disorders constitute various manifestations of anal infection. Any therapeutic procedure which ignores anal infection is likely to fail as far as the cure of anorectal inflammatory disease is concerned.

## Southern Surgeon, Atlanta, Ga.

**11**:463-542 (July) 1942

Conservative Surgical Treatment of Certain Renal Lesions. T. D. Moore, A. L. Herring and D. A. McCannel, Memphis, Tenn.—p. 463.
Aids in Diagnosis of Acute Surgical Conditions of Abdomen. H. Martz, Birmingham, Ala.—p. 475.
Goiter in Central Kentucky. W. H. Pennington, Lexington, Ky.—p. 490.
Carcinoma of Stomach with Acute Perforation, Complicated by Bilateral Krukenberg Tumors: Case Report. J. H. Francis, Memphis, Tenn.—p. 498.
Some Fundamentals of Plastic Repair. W. R. Metz, New Orleans.—p. 502.
Treatment of Varicosity of Lower Extremities. P. J. Sarma, Camp Barkeley, Texas.—p. 514.
Surgical Risk in Elderly Patients. W. H. Parsons and W. K. Purks, Vicksburg, Miss.—p. 525.

**11**:543-612 (Aug.) 1942

Duodenal Diverticula: Their Significance and Treatment. J. M. T. Finney Jr., Baltimore.—p. 543.
*Acute Intussusception of Childhood: Its Relation to Mesenteric Lymphadenitis. C. H. Avent, Memphis, Tenn.—p. 555.
Postoperative Complications. F. A. Coller and A. O. Singleton Jr., Ann Arbor, Mich.—p. 560.
Importance of Preserving Physiologic Functions of Nose in Intranasal Surgery. R. G. Reaves, Knoxville, Tenn.—p. 574.
Spinal Epidural Varicosities. J. Greenwood Jr., Houston, Texas.—p. 581.
Education of the Young Physician Fifty Years Ago—The 1942 C. Jeff Miller Memorial Lecture. H. E. Miller, New Orleans.—p. 585.

**Acute Intussusception of Childhood.**—In 16 instances of acute intussusception of no demonstrable cause in children Avent observed that mesenteric lymphadenitis was present as an associated lesion in 7. It is possible that the lymphadenitis is of more frequent occurrence as the 16 patients were operated on by six resident surgeons who were not looking for the disease and mentioned it only as a passing observation. The mesenteric lymphadenitis may assume an important etiologic role in acute intussusception, especially as almost all the acute intussusceptions of childhood are ileocecal, a fact which again lends credence to the importance of lymphoid hyperplasia as its cause.

## Surgery, Gynecology and Obstetrics, Chicago

**75**:145-272 (Aug.) 1942

Anaerobic Nonhemolytic Streptococci in Surgical Infections on General Surgical Service. W. R. Sandusky, E. J. Pulaski, Balbina A. Johnson and F. L. Meleney, New York.—p. 145.
*Effect of Therapeutic Doses of X-Ray on Infections and Inflammations: Experimental Studies. L. A. Weed, A. P. Echternacht, E. J. Meister and R. Isenhour, Indianapolis.—p. 157.
Primary Cleansing, Compression and Rest Treatment of Burns. V. E. Siler, Cincinnati.—p. 161.
*Exclusive Use of Soap and Water in Traumatic Wounds. R. L. Kerrigan, Michigan City, Ind.—p. 165.
Experimental Production of Gastric and Duodenal Ulcers in Laboratory Animals by Intramuscular Injection of Histamine in Beeswax. L. J. Hay, R. L. Varco, C. F. Code and O. H. Wangensteen, Minneapolis.—p. 170.
War Injuries to Arteries and Their Treatment. E. Holman, San Francisco.—p. 183.
*Postoperative Thrombosis and Embolism: Their Treatment with Heparin. J. T. Priestley and N. W. Barker, Rochester, Minn.—p. 193.
Cytologic Factors in Peritonitis and Peritoneal Immunity. H. B. Morton, Lincoln, Neb.—p. 202.
Section of Posterior Roots for Relief of Pain in Angina Pectoris: Observations in Five Cases. H. Haven and R. L. King, Seattle.—p. 208.
Wound Hormone Concept in Wound Healing. E. S. Cook and J. C. Fardon, Cincinnati.—p. 220.
Simplified Technic for Thigh Amputation. P. Thorek, Chicago.—p. 225.
Habitual Dislocation of Shoulder Joint. S. L. Odgers and F. W. Hark, Chicago.—p. 229.
Diagnosis and Treatment of Amebic Liver Abscess. C. J. Berne, Los Angeles.—p. 235.
Metaplasia and Carcinoma in Cervical Polyps. J. Mezer, Brookline, Mass.—p. 239.
Granulosa Cell Tumors of Ovary. W. H. Harris Jr., New Orleans.—p. 245.
Experience with One Hundred and Five Leg Lengthening Operations. Alvia Brockway and S. B. Fowler, Los Angeles.—p. 252.
New Approach to Diagnosis of Herniation of Intervertebral Disk. W. Duncan and T. I. Hoen, New York.—p. 257.

**Effect of X-Rays on Infections and Inflammations.**—According to Weed and his collaborators, their study of the effect of roentgen rays on Clostridium welchi in vitro and in such infection in guinea pigs has not demonstrated any real beneficial effect with doses even beyond those permitted for human therapy.

**Exclusive Use of Soap and Water in Traumatic Wounds.**—Kerrigan reports the results of proper cleansing, exclusively with soap and water, of 12,044 open wounds treated over five years resulting from 21,862 industrial injuries. Hospitalization was necessary for only 18 cases in which the primary care consisted of white soap and water cleansing and excision of only devitalized tissue. Of 9,195 compound wounds involving the wrist and hand only 10 of the patients required hospitalization. As these injuries were so uniformly contaminated and so difficult to cleanse and because in no instance in which primary soap and water cleansing was given was it necessary to hospitalize an individual for infection, the authors feel that this is the severest test for the efficacy of the method. The method is also successful in the hands of nurses who care for many of the minor compound wounds. Among 101 cases of compound fracture 4 infections occurred. There was no osteomyelitis or delayed union.

**Postoperative Thrombosis and Embolism.**—Priestley and Barker reviewed the records of the patients undergoing various surgical procedures during thirteen years and discovered 1,665 cases of pulmonary embolism and thrombophlebitis, or an incidence of 0.95 per cent. Actually the incidence is probably higher, as some instances of mild thrombophlebitis or small pulmonary emboli were undoubtedly not recognized. There were 343 fatalities. Certain factors appear to be significant in the development of these conditions. The site of operation (pelvic) apparently bears some relationship. There is a predisposition in the presence of cancer. Splenectomy was followed by the highest incidence of embolism. Infection has some relation, as thrombosis and embolism occur with much greater frequency after an operation for a ruptured appendix than after removal of an unruptured appendix. Obesity and thrombophlebitis are higher in women than in men, but pulmonary embolism, both fatal and nonfatal, is higher in men than in women. Why this is so cannot be explained on the basis of the difference in surgical procedures performed on the two sexes. Thrombophlebitis occurs most often between

the ninth and fourteenth postoperative days, and pulmonary embolism, both fatal and nonfatal, between the seventh and fourteenth days. It seems certain that a relationship exists between venous thrombosis or thrombophlebitis and embolism and vice versa, as the conditions were associated in one fourth of the cases. There appear to be three main etiologic possibilities for postoperative venous thrombosis: decrease in the rate of venous blood flow with resultant stasis, trauma or some other type of change in the wall of the vein and some abnormality in the blood itself. The serious difficulty in the preventive treatment of thrombosis and embolism is the inability to determine preoperatively in which patient, if he is not treated, thrombosis or embolism may develop. Heparin has been most effective in increasing the rate of venous flow, but unfortunately in its present form it is not suitable for routine postoperative use. As heparin is not to be administered to every surgical patient, it would appear reasonable to employ it for any person who, because of previous phlebitic or embolic phenomena or other reasons, is expected to experience further difficulties in this regard. Otherwise the group of patients in whom embolism is most likely to occur is that group who have already experienced one episode of nonfatal embolism. Clinical experience with heparin in patients who have had nonfatal pulmonary embolism has been most gratifying. It was administered to 63 such patients, and only 2 of them died of another episode of embolism. The authors' experience with heparin in thrombophlebitis has been limited, but it is their impression that heparin will prevent further growth of a thrombus and in this manner prevent aggravation of the condition. Also it prevents other thrombi from developing during its administration. In addition to the use of heparin and the conventional treatment by immobilization, elevation and heat the other suggestions made during recent years for the treatment of thrombophlebitis have been paravertebral injection and venous ligation.

## Tennessee State Medical Assn. Journal, Nashville

**35**:251-288 (July) 1942


Industrial Health and the Practicing Physician. C. M. Peterson, Chicago.—p. 251.
Some Further Studies on Trigenitis. H. L. Douglass, C. G. Ransom and B. H. Webster, Nashville.—p. 254.
Obstructive Lesions of Left Colon: Diagnosis and Treatment. R. L. Sanders, Memphis.—p. 260.
Abdominal Symptoms Not Due to Abdominal Disease. W. H. Witt, Nashville.—p. 267.


## Virginia Medical Monthly, Richmond

**69**:409-470 (Aug.) 1942


Prevalence of Syphilis in Virginia as Indicated by Evaluation of Selective Service Serologic Tests. I. C. Riggin, E. M. Holmes Jr., W. E. Baker and Gertrude A. Lucas, Richmond.—p. 411.
A Psychiatrist Looks at the Problem of Alcoholism. M. Moore, Boston.—p. 417.
Management of Crossed Eyes Based on Observation of Forty-Six Cases. E. G. Gill and J. H. Gressette, Roanoke.—p. 420.
Primary Dysmenorrhea. W. Bickers, Richmond.—p. 423.
Effect of War on Behavior of Children. H. DeJ. Coghill, Richmond.—p. 429.
Disturbances of Cardiac Rhythm. B. Lidman, Norfolk.—p. 436.
Conservative Obstetrics. M. P. Rucker, Richmond.—p. 440.
Extramammary Breast Carcinoma. J. L. Rawls, Norfolk.—p. 448.
School Medical Service. C. L. Outland, Richmond.—p. 449.


## Western J. Surg., Obst. & Gynecology, Portland, Ore.

**50**:319-370 (July) 1942


Hydatidiform Mole and Chorioepithelioma: Comparison of Two Consecutive Five Year Studies. A. Holman, Portland, Ore.—p. 319.
Surgical Lesions of Common Duct. V. C. Hunt, Los Angeles.—p. 327.
Lipomas. P. N. Hogue, Seattle.—p. 332.
Sterility and Fertility: I. Recent Advances in Clinical Evaluation of Spermatozoa. A. I. Weisman, New York.—p. 339.
Id.: II. Mechanism of Ovulation and Its Relation to Problem of Sterility. C. G. Hartman, Urbana, Ill.—p. 344.
Id.: III. Diagnosis of Female Sterility. I. C. Rubin, New York.—p. 349.
Id.: IV. Physician's Credo for Artificial Insemination. A. F. Guttmacher, Baltimore.—p. 357.
Acute Appendicitis as Complication of Pregnancy. E. L. Zander, New Orleans.—p. 360.


# FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

**23**:103-150 (June) 1942


Purification and Some Physical and Chemical Properties of Penicillin. E. P. Abraham and E. Chain.—p. 103.
Spectrographic Examination of Penicillin Preparations. E. R. Holiday.—p. 115.
*Some Biologic Properties of Highly Purified Penicillin. H. W. Florey and M. A. Jennings.—p. 120.
Proactinomycin: "Bacteriostatic" Produced by Species of Proactinomyces. A. D. Gardner and E. Chain.—p. 123.
Experiments Showing Influence of One Growing Tumor on Another. S. Russ and G. M. Scott.—p. 127.
Deterrent Effect of Light on Incidence of Spontaneous Breast Cancer in Strain A Mice. F. L. Apperly and M. K. Cary.—p. 133.
Leukocidin of Group A Hemolytic Streptococci. E. W. Todd.—p. 136.
Valence of Antibodies and Structure of Antigen Antibody Precipitate. F. Haurowitz and P. Schwerin.—p. 146.


**Biologic Properties of Highly Purified Penicillin.**—According to Florey and Jennings, the purest preparation of penicillin so far available completely inhibits the growth of Staphylococcus aureus at a dilution of between 1 in 24 and 1 in 30 million. An intravenous injection of 20 mg. of the sodium salt of a somewhat less pure preparation was without apparent effect on a mouse, and human leukocytes survived for an hour in a 1 per cent solution. Even if citrinin and penicillic acid should prove to be useful therapeutic agents, too much emphasis should not be laid on their easy availability, as penicillin is five hundred times as active against many organisms and it is certainly nontoxic.

## British Journal of Radiology, London

**15**:185-212 (July) 1942


*Melorheostosis: Report on Case with Review of Literature. Emily L. Franklin and I. Matheson.—p. 185.
Management of X-Ray Reactions. N. S. Finzi.—p. 192.
Volume Dosage in Deep X-Ray Therapy. F. Ellis.—p. 194.
Considerations in Measurement of X-Rays for Deep Therapy. F. T. Farmer.—p. 203.
Note on Mechanism of Deglutition. A. R. Thomas.—p. 209.
Bilateral Fractures of Clavicles. W. Tennent.—p. 211.


**Melorheostosis.**—Franklin and Matheson report a case of melorheostosis of extensive distribution in a woman of 41 with symptoms for at least fifteen years. For the last ten to fifteen years she has had a recurrent ulcer of the dorsum of the right foot, for which condition she was hospitalized. Changes typical of melorheostosis are present in many bones of the right half of the skeleton, while, with the exception of the fifth lumbar vertebra, all the bones of the left half appear normal. The principal change is an extensive hyperostosis along the medial aspect of the skeleton of the right upper and lower limbs and in some of the bones of the skull, ribs and spine. In the long bones this hyperostosis gives rise to much thickening and distortion of the shaft, the surface of which is either wavy or nodular. There is a varying degree of encroachment on the medullary cavity. In some of the bones long, narrow, dense streaks are seen. In the extremities of the bones small patches of hyperostosis are seen. The articular surfaces are unaffected, but in the lumbar spine there are some periarticular bony outgrowths arising from the right articular processes. There is no apparent restriction of movement. In the skull, spine, carpus and tarsus the distribution of hyperostosis is fairly even throughout, while in the tarsal bones there is also coarsening of the trabeculation. Apart from the bone changes there are some extremely dense nodular deposits in the soft tissue to the inner side of the lower end of the right femur, behind the right ankle joint, below the right hip joint and near the superior angle of the right scapula. The two points of special interest are the widespread and unilateral distribution of the condition and the fact that an upper and lower limb are involved. The roentgen appearance of melorheostosis is as though an excessive amount of bone had been poured down one aspect of the bones. The various hypotheses offered to explain the etiology of the condition do not apply when the character and distribution of the lesions in the author's case are considered. The etiology of melorheostosis remains a mystery.

V 1
194

## British Medical Journal, London

**1:743-780 (June 20) 1942**

Medical Planning Commission. Draft Interim Report.—p. 743.
*Mental Symptoms in Bromide Intoxication. E. H. Kitching.—p. 754.
Inductotherm Treatment of Sulfapyridine Anuria. J. M. Rogan and E. K. Cruickshank.—p. 757.
Cerebrospinal Fluid in Acute Anterior Poliomyelitis. A. L. Eyre-Brook. —p. 758.
*Tetany in Blood Donors. W. F. Frazer and F. S. Fowweather.—p. 759.
Meningococcic Septicemia. W. S. C. Copeman.—p. 760.

**Mental Symptoms in Bromide Intoxication.**—Kitching reports 9 cases of bromide intoxication. Mental symptoms were prominent in all; bromide intoxication either was the main illness or arose during the treatment of some other condition. One patient died; the rest recovered with sodium chloride treatment, although 2 were seriously threatened. The diagnosis depends on the mental and physical signs and the history; it is confirmed by the blood bromide estimation and the response to treatment with chloride. Of the mental signs confusion, clouding of consciousness, is the most important. The normal blood bromide is 0 to 2.5 mg. per hundred centimeters. The level at which toxic symptoms begin varies with idiosyncrasy, tolerance due to prolonged intake, age, renal or hepatic disease or restricted diet. Levels of less than 100 mg. can be ignored, those of 100 to 200 mg. may produce symptoms in elderly patients or patients with cardiovascular or renal disease and those of more than 200 mg. produce symptoms in most patients. The therapeutic test is specific: if sodium chloride causes rapid amelioration of symptoms, the diagnosis of bromide intoxication becomes a certainty. The usual dose is 2 to 4 Gm. four times a day.

**Tetany in Blood Donors.**—The incidence of tetany following blood donation is reported by Frazer and Fowweather as being 1 in 1,000. The signs, typical spasms of the hands and feet and positive Chvostek's sign, have been unmistakable. The number of donors affected is certainly small, but the condition is important and has not been reported previously. The attack is not wholly dependent on the amount of blood withdrawn; in 1 donor it occurred after the removal of only 60 cc. of blood, in another after 400 cc. and in 5 others after the full quantity had been drawn. Five of the attacks occurred in women. This is in agreement with the general experience that spontaneous hyperventilation tetany occurs mainly in females. The blood changes, consisting in a low inorganic phosphorus and high normal or raised calcium level, correspond to those found in other cases of spontaneous hyperventilation tetany. The principal factor concerned was believed to be overbreathing resulting from nervousness and apprehension. Another possible factor is the effect of epinephrine contained in the local anesthetic. The treatment recommended is to supply air enriched with carbon dioxide. If a supply is not available the patient should be caused to rebreathe his own expired air by placing a paper bag over his nose and mouth.

**1:781-808 (June 27) 1942**

Treatment of Scalp Wounds in Air Raid and Other Casualties. E. H. Batterell and G. Jefferson.—p. 781.
*Syncopal Reactions in Blood Donors: Investigation of 222 Cases. G. E. O. Williams.—p. 783.
Expanding Pelvis. Kathleen Vaughan.—p. 786.
*Massive Aspirin Overdosage: Recovery. W. Oakley and J. P. Donnell. —p. 787.
Vital Statistics of England and Wales in 1941. P. Stocks.—p. 789.

**Syncopal Reactions in Blood Donors.**—Williams tried to determine by investigation in 222 cases whether the fainting of blood donors was associated with any individual constitutional or circumstantial peculiarities. There was a definite correlation between certain individual and environmental factors and the incidence of these reactions. The avoidable factors were as follows: 1. Fainting was observed when supervision of the donors was not adequate. Rest immediately after the donation of blood was important. In one hospital where tea was served before the donors moved from their couches the rate was low. 2. While isolation is desirable for esthetic reasons, it is not believed to affect the tendency, as donors are reassured by seeing others giving their blood. "Epidemic" fainting, however, is aggravated with no isolation and it is better for young donors attending in parties to be separated. 3. Donors known to be menstruating should not be accepted, but it is not advisable to exclude such donors unless such information is given voluntarily. The unavoidable factors were the following: 1. The incidence of reactions was significantly higher among those of the "asthenic" diathesis than among donors of more stocky appearance. This suggests that syncopal reactions may be associated with increased vagal tone. This hypothesis is further borne out by bradycardia and low blood pressure in such donors. 2. The higher incidence of fainting among donors less than 30 provides further evidence of increased vagal tone and syncope following transfusion.

**Massive Overdosage of Acetylsalicylic Acid.**—The recovery of a patient after the taking of nearly 1,000 grains (65 Gm.) of acetylsalicylic acid is cited by Oakley and Donnell, who state that the treatment of such acute poisoning is essentially that of acidosis and dehydration with vasomotor collapse. Acidosis is best treated by large doses of sodium bicarbonate and dextrose intravenously. The dextrose infusion must be controlled by frequent estimations of alkali reserve. For the dehydration with vasomotor collapse in this condition, as in diabetic coma, large volumes of saline solution, plasma and adrenal cortex extract intravenously are indicated. The most prominent features of the poisoning were exophthalmos, profuse sweating, coma, delirium, fixed pupils, absent tendon jerks, extensor plantar response, persistently raised pulse rate and low blood pressure and deep abdominal breathing.

**2:1-30 (July 4) 1942**

Treatment of Scabies. K. Mellanby, C. G. Johnson and W. C. Bartley. —p. 1.
*Narcoanalysis in Treatment of War Neuroses. J. F. Wilde.—p. 4.
Posturing in Bronchography. F. D. Hart.—p. 7.
Effect of Bleeding on Blood Sugar Level in Blood Donors. B. J. Lawrence and G. Plaut.—p. 8.
Condition of Retailed Raw Milk in an Urban Area. C. A. Green. —p. 9.

**Narcoanalysis in Treatment of War Neuroses.**—Wilde used pentothal sodium for the study of 50 neurotic soldiers encountered in thirteen months whose investigation was held up by resistance but who were physically fit to receive pentothal and could be persuaded to submit to the treatment. Thirty-five had a predisposition to neurosis prior to service; 31 had suffered actual war trauma. Of the 50 so treated 33 were rendered fit for duty and 17 were invalided. About half those invalided were fit to return to good posts in civil life, a fact which in some militated against the successful removal of the neurosis. The author has found sodium pentothal intravenously of assistance in hysteria in its various manifestations, anxiety states, the after effects of head and spine injuries, borderline psychosis, mental deficiency, doubtful epilepsy and in simulation and malingering.

## East African Medical Journal, Nairobi

**19:73-104 (June) 1942**

*Bee Stings. A. J. Jex-Blake.—p. 74.
Is War Eugenic or Dysgenic? That Is, Does War Improve or Impair the Physical or Mental Qualities of Future Generations? H. L. Gordon.—p. 86.

**Bee Stings.**—Jex-Blake states that little or nothing seems to be known about the nature of the venom of wasps, bumble bees and hornets. A sparrow stung by wasps dies of respiratory failure after a period of convulsions and somnolence. In human beings the reaction to bee and wasp stings varies with their idiosyncrasy: The hardened bee keeper may be stung by twenty bees and have nothing to show for it but a few small, painless and transient pimples, while another person may be stung but once and die in a minute or two if he chances to be hypersensitive to the venom. Hypersensitivity in human beings may take two forms: allergy and anaphylaxis. In the postmortem examination of persons killed by bee stings the following was found: (1) voluminous, overfilled, downy and emphysematous lungs, possibly exuding frothy fluid, (2) overdistention of the right side of the heart and (3) splanchnic dilatation and hepatic engorgement. The poison or antigen of bee venom is believed to reside in its protein. East African bee keepers agree that the local bees are much more savage than those hived in England, and some add that their individual stings are worse and more painful. The effects of bee stings in East Africa appear to be as severe as wasp stings in

England. In temperate climates swarming is confined to a few months in the spring and summer. But in Kenya wandering swarms of bees may be met on the road, on the farm or in the house at any time of the year. When they attack, they do so on a heroic scale. Death from one or more bee stings has been known to occur in Europeans, Asians and Africans in Kenya. The available mortality statistics are incomplete, but it may be supposed that half a dozen or more natives are killed by bees every year. Similar losses have also occurred among domestic animals and pets. Difficulties may arise in accounting for a death actually due to bee stings. Swarms of bees in the open or in the house should be given a wide berth by all except bee experts. Others should deal with them only after dusk, if something has to be done—spraying with flit or liquid petrolatum or the insufflation of pyrethrum powder. An attacked person is encouraged to stand still, not to run away, not to try and beat the bees off, that is to adopt the attitude of "nonviolent noncooperation." The local application of any form of alkali—weak ammonia or washing soda—is perhaps best for allaying the irritation of an ordinary bee sting. For wasp stings dilute acids such as vinegar, rather than alkalis, are recommended. In the rare severe case stimulants to keep the heart and respiration going, sedatives to relieve severe pain or muscular spasms, in fact symptomatic treatment is indicated. Good results have followed the use of a 25 per cent solution of nikethamide, solution of posterior pituitary and epinephrine administered hypodermically for severe shock; also black coffee and half a grain (0.03 Gm.) of ephedrine, and in France injections of camphor liniment have been recommended.

## Journal Obst. & Gynaec. of Brit. Empire, Manchester

**49**:101-220 (April) 1942

Radium Therapy of Carcinoma Cervix. B. Sandler.—p. 101.
Placenta Accreta: Report of Two Cases. J. F. Cunningham.—p. 149.
*Treatment of Functional Uterine Hemorrhage with Antimenorrhagic Factor. A. M. Sutherland.—p. 156.
Locked Twins. Report of Case. E. L. Nicolson.—p. 162.
Vaginal Cystotomy for Treatment of Vesical Calculus. C. Moir.—p. 169.
Carcinoma of Body of Uterus. H. H. F. Barns.—p. 173.

**Functional Uterine Hemorrhage.**—Sutherland used a new antimenorrhagic liver factor, "glamules," in the treatment of 50 cases of functional uterine bleeding. Of the 46 cases for whom there was a follow-up menstrual function was completely restored in 28, there was material improvement (almost amounting to a cure, further treatment was not needed) in 4 and failure in 14, in 8 of whom there was temporary improvement. The results were best in women less than 25 and became less satisfactory as the age of the patient increased.

**49**:221-340 (June) 1942

*Eclamptic Phenomenon and Placental Ischemia. J. Young.—p. 221.
Cesarean Section Under Spinal Analgesia. R. C. Thomas.—p. 247.
Macrocytic Anemia of Pregnancy. A. L. Mudaliar and M. K. K. Menon.—p. 284.
Pruritus Vulvae: Leukoplakia and Kraurosis. Agnes Savill.—p. 310.

**Eclamptic Phenomenon and Placental Ischemia.**—Young presents evidence which shows that pregnancy toxemia (preeclampsia and eclampsia) is preceded and determined by an abortion factor which operates by interfering with the maternal circulation in the placenta. Two alternative mechanisms are recognized: 1. Stasis or complete arrest of the blood flow is restricted to certain regions, resulting in local placental degeneration. After complete arrest of the blood flow, if there is a sufficient interval of fetal survival with continuing circulation in the remaining placenta, the ischemic area infarcts. 2. The vascular changes occur throughout the decidua and consist of dilatation and free blood extravasation. Retroplacental bleeding is an extreme expression of widespread vascular disturbance. In many instances both factors are operative. The toxemia develops subsequent to the placental degeneration. Its severity is determined by the extent of the placental involvement and the interval during which the fetus survives in utero. At least half of the placenta may be thus compromised before fetal death occurs. The relation of toxemia to the initial stages of the degenerative changes explains how after early fetal death or delivery the full extent of the placental involvement may not be visible macroscopically or microscopically. This explains the high incidence and the severity of the toxemia in concealed accidental hemorrhage, and also that in many such cases there may be no evidence of toxemia. The latter are explained by immediate massive involvement and immediate fetal death. In concealed accidental hemorrhage (in which often an extensive muscular lesion is also present) an acute renal lesion with blood stained urine, oliguria or suppression and a rapidly rising blood urea may be superimposed on the typical preeclamptic or eclamptic phenomenon. A correlation has been found between the uteroplacental lesion and toxemia only in severe cases, but none has been found between the placenta and the minor clinical manifestations of toxemia; the latter may arise from a lesion which eludes present methods of detection.

## Medical Journal of Australia, Sydney

**1**:611-630 (May 30) 1942

Late Treatment of War Wounds. F. V. Stonham.—p. 611.
Visceral Neuroses. E. H. Stokes.—p. 616.
Paralytic Squint. E. T. Smith.—p. 619.
Experiments on Improvement of Treatment of Mustard Gas Lesions of Skin. F. Goldschlag.—p. 620.

**1**:631-648 (June 6) 1942

*Bacillary Dysentery in Australian Hospital in the Middle East. F. R. Hone, E. V. Keogh and R. Andrew.—p. 631.
*Relapsing Fever in Tobruk. E. L. Cooper.—p. 635.

**Bacillary Dysentery in the Middle East.**—Hone and his colleagues describe the clinical features and management of 600 Australian, New Zealand and British soldiers admitted to an Australian general hospital in the Middle East. They restrict their article to some 300 cases of diarrhea arising among troops situated in the vicinity of the hospital and seen within the first few days of the outbreak. The striking feature of the cases was their mildness. Not only did no death occur, but no patient was considered "seriously ill." Only thirteen Shigella infections were encountered. The average stay of the patients in the hospital was about one month. This may seem excessive, but the authors believed that premature discharge risked not only relapse but the establishment of a possible source of infection among healthy troops. It was their belief that a negative stool culture cannot be relied on in detecting potential "carriers," and they relied on the experience of Colonel Boyd and his colleagues, who found that the healthy subject passing normal stools never excretes dysentery bacilli. For that reason a patient was not discharged until he was free from symptoms and his stools were of normal consistency and contained no mucus for several days. The introduction of sulfaguanidine may shorten hospitalization.

**Relapsing Fever in Tobruk.**—Early in May 1941 spirochetes were found in the blood of 2 of the personnel of an Australian field ambulance corps living in a cave in the Tobruk fortress area. During the summer months May until August 68 patients suffering from relapsing fever passed through an Australian general hospital in Tobruk. Eight of these were evacuated from the fortress area and were later proved to have been suffering from relapsing fever, although spirochetes were not found in their blood in the Tobruk hospital. Cooper followed the records of 63 of these men through hospitals and convalescent depots, and he believed that the records were sufficiently complete to formulate a clinical picture of relapsing fever. Thirty-nine of the 63 soldiers affected had been living in caves or in old dugouts constructed by Italian troops. The shelters had not been inhabited by Italians or Libyans for three months prior to the first case of relapsing fever. Fever associated with spirochetes in the blood smear was the only feature common in all these patients. Some patients had in addition symptoms and signs suggesting involvement of the central nervous system, the reticuloendothelial tissues, the renal tract or the lungs. Late involvement of the central nervous system with facial paralysis was relatively common. As there is no specific treatment, arsenic was given intravenously to most of the patients. All but 4 patients received inadequate amounts. It had no effect on the fever. Spirochetes were found in the blood of 17 arsenic treated patients. A pyrexial relapse occurred in 41 after arsenic was administered. However, its effect in this disease must be regarded as still not proved, as the dose used was not sufficient.

## Schweizerische medizinische Wochenschrift, Basel

**72:277-300 (March 7) 1942. Partial Index**

Pathogenesis of Sciatica and Brachialgia. G. de Morsier.—p. 277.
*Lingual Administration of Androgen. K. Miescher and P. Gasche.—p. 279.
*Endocrine Preparations in Treatment of Emaciation. Anita Saurer.—p. 281.
Some Aspects of Problem of Blood Preservation. R. Fischer.—p. 291.
Practical Filtration of Transfusion Blood. R. Bucher.—p. 297.

**Lingual Administration of Androgen.**—According to Miescher and Gasche the availability of testosterone propionate in tablet form is a great advance, but there seems to be no satisfactory relationship between the required dose when given by mouth or by the parenteral route. Biskind had proved that male as well as female hormones are largely destroyed by the liver. To circumvent passage to the liver, it was attempted to allow the preparation to be absorbed from the oral mucosa. The authors compared the effect of the lingual administration of testosterone and methyltestosterone on the seminal vesicles, prostate and other sexual organs of castrated rats with that of administration by stomach, using 342 animals. They found that alcoholic solutions of the two substances when given by the lingual route act from twenty to thirty times stronger than if they are given by the stomach. In case of lingual resorption the methyltestosterone is likewise superior to that of testosterone. It is about three times as effective.

**Endocrine Preparations in Treatment of Emaciation.**—According to Saurer emaciation can be a manifestation of different disease entities. Latent infection or malignant tumor should be searched for and the possibility of an inadequate or onesided diet should be considered. Inadequate utilization or excessive combustion resulting from metabolic disorders, which in turn result from impaired neuroendocrine regulation, are other important factors. Since endocrine preparations have become available, many of these disorders have become amenable to treatment. The author obtained some surprisingly favorable results with desoxycorticosterone acetate and with estrogens. She discusses 12 cases in the treatment of which ovarian and adrenal cortex extracts were used. In all but 1 of the cases of emaciation, in which infection and tumor could be excluded, endocrine therapy improved the appetite and weight and the patients felt stronger. Three patients in whom emaciation was accompanied by secondary amenorrhea were treated with estradiol. This not only normalized the menstrual cycle but also improved the weight. Patients with addisonoid symptoms were treated with desoxycorticosterone acetate and the result was a partial disappearance of these symptoms. In the majority of the examined cases of emaciation disorders of the carbohydrate metabolism existed. They differed in character; some were normalized by the medication and others were not. An effect on the fat and protein metabolisms could not be observed in the reviewed cases, but neither could it be definitely excluded. Simultaneously existing anemias were not influenced. Once a temporary hypertension resulted as a secondary effect of treatment with desoxycorticosterone acetate. This treatment also resulted several times in water retention, but the increase in weight cannot be entirely ascribed to this. The effect of the endocrine treatment is partly due to a specific substituting action but probably also partly to a nonspecific action. The results indicate that some cases of emaciation respond only to suitable endocrine therapy. It is assumed that corresponding metabolic disturbances in other diseases can be influenced in the same manner.

## Amatus Lusitanus, Lisbon

**1:247-328 (March) 1942. Partial Index**

*Circulatory Disorders Due to Avitaminosis $B_1$: Review of Literature. J. Moniz de Bettencourt.—p. 247.
Uteroplacentary Apoplexy: Case. J. Fontes.—p. 260.
Aspects of Antidiphtheric Immunization in a Territory of Lisbon. J. Cutileiro.—p. 284.

**Circulatory Disorders Due to Avitaminosis $B_1$.**—According to Moniz de Bettencourt, circulatory disorders due to avitaminosis $B_1$, namely dyspnea of effort and while lying down, palpitations, cardiac asthma, congestion of the lung, engorgement of veins, enlargement of the liver, edema and ascites, hydrothorax and hydropericardium, are similar to those of benign cardiac insufficiency. Examination of the chest reveals dilatation of the heart and of the pulmonary artery and changes in the cardiac shadow as seen in mitral disease. Tachycardia, embryocardia, gallop rhythm and systolic or diastolic murmurs are heard on auscultation. As a rule there are no disturbances of the rhythm, but there may be changes of the complexes of the electrocardiogram and sometimes inversion of the T wave. The acceleration of conduction with shortening of the PR segment of the electrocardiogram is rarely observed but it is a characteristic sign of avitaminosis $B_1$. In the course of avitaminosis $B_1$ the velocity of circulation and the cardiac output are increased and the utilization of oxygen by the peripheral nerves is diminished. The coexistence of venous stagnation, edema and increase of the velocity of circulation is of diagnostic value. Sudden collapse may develop. The causation of cardiovascular disorders by avitaminosis $B_1$ has been explained in the literature by several theories, such as disturbances of the metabolism of water due to avitaminosis $B_1$ with consequent cardiac edema and dysfunction of the myocardium, by local acidosis due to metabolic disturbances of lactic acid in the blood, by local disturbances of the metabolism of glucosides and mainly by the interference with the sympathetic stimulation of the cardiovascular apparatus due to insufficient oxygenation of the nervous tissues. The therapy of circulatory disorders due to avitaminosis $B_1$, including sudden collapse, consists in administration of vitamin $B_1$ in large daily doses (from 20 to 50 mg. a day). Administration of vitamin $B_1$ improves the capacity of the peripheral nervous tissues to use oxygen of the blood with resulting diminution of the dilatation of the arterioles and later disappearance of arteriolar dilatation and diminution of the velocity of circulation. Diuresis increases, the subjective symptoms improve and later disappear, and the dilatation of the heart and electrocardiographic changes regress. The effect of vitamin $B_1$ therapy is rapid in the majority of cases (within three to five days). The good results confirm the diagnosis. In cases in which the effect is not rapid it is advisable to persist in the administration of the drug and to wait before excluding the diagnosis of avitaminosis $B_1$.

## Anales de la Soc. de Puericultura de Buenos Aires

**8:1-102 (Jan.-March) 1942. Partial Index**

*Elimination of Sulfonamide Compounds in Milk. R. Cibils Aguirre, J. R. Calcarami, D. Aguilar Giraldes and H. M. Berisso.—p. 1.
Idiopathic Anemia of the Newborn. F. J. Menchaca.—p. 17.

**Elimination of Sulfonamide Compounds in Milk.**—Cibils Aguirre and his collaborators report studies on 49 puerperal women and on 34 newborn infants. They determined the excretion of sulfonamide compounds in milk, the concentration in the milk, its relation to the blood concentration and the proportion of the free and conjugated fractions. In all, 230 determinations were made. The author employed the technic of Bratton-Marshall for the blood and urine and the modification of Berisso for the milk. The customary therapeutic doses of sulfonamide preparations were given to the mothers. The newborn infants who were nursed by their mothers under these conditions never presented signs of toxicity or intolerance. This is in accord with the insufficient dose which they receive in the milk. The intake in the milk is therefore not a practical therapeutic method for the newborn infants nor does the medication of the mothers with sulfonamides necessitate the suspension of breast feeding. Excepting on the days when lactation begins, the concentration of the sulfonamide compounds in the milk decreases below that of the blood as the puerperium progresses. Sulfanilamide, sulfapyridine and sulfa-acetylamide are exceptions. The excretion of the sulfonamides in the milk varies with the administered derivative. The authors observed that it is greater in milk than in blood, in decreasing order, in sulfa-acetylamide, sulfapyridine and sulfanilamide and inferior in milk than in blood in the other derivatives. The conjugation in milk is greater in sulfanilamide, then follow sulfanylmethylsulfanilamide, sulfathiazole, sulfa-acetylamide, sulfapyridine and sulfapyrimidine. With sulfadimethylsulfanilamide the authors obtained only traces.

## Arch. Lat. Amer. de Card. y Hemat., Mexico, D. F.

**12**:53-86 (March-April) 1942. **Partial Index**

*Citric Acid in Blood Serum as Sign of Lesion of Hepatic Parenchyma in Heart Disease. G. Somolinos d'Ardois.—p. 53.

**Citric Acid in Blood Serum in Heart Diseases.**—Somolinos d'Ardois made quantitative determinations of citric acid in the blood serum of 30 patients with heart disease. These were placed in four different groups: (1) patients without decompensation, (2) with decompensation of about one month duration and (3) and (4) with intermittent and chronic decompensation, respectively. Sjöström's index was used for the quantitative determination of citric acid in blood and Sjöström's citric acid tolerance test was utilized as well. The liver was normal in 7 of 8 patients in the first group, moderately enlarged, hard and painful in 6 patients in the second group and greatly enlarged, hard and painful in the 16 patients who made up the third and fourth groups. The amount of citric acid in the blood was normal for all patients in the first group but 1 who had hepatitis and a slight increase of citric acid in the blood. It was normal or slightly increased for all patients in the second group. It was irreversibly increased for all patients of the third and fourth groups. The acid citric tolerance test gave negative results for all the patients in the first group, slightly positive for all patients in the second group and strongly progressive positive for all patients in the third group and strongly fixed positive for all patients in the fourth group. The author found by necropsy that hyperacidcitricemia is due to anatomic lesions of the liver. It is proportional to the acuteness of the hepatic lesion and is not related to the degree of heart decompensation. He advises that the test be carried on in the course of heart disease for the diagnosis of the condition of the liver. The test is simple and reliable.

## Semana Médica, Buenos Aires

**49**:953-1012 (May 14) 1942. **Partial Index**

Systolic Snap Heart Sound: Relation with Phases of Heart Contraction. C. Patiño Mayer, L. Lepera and F. A. Pataro.—p. 953.
Lobar Pulmonary Malignant Granuloma with but Few Relations with Lymphatic Ganglions. J. F. Marquez, L. Krauss and H. Blanda.—p. 964.
Myeloblastic Leukosis: Case. E. Reggiani and J. Scolnik.—p. 988.
*Thrombosis of Primary Carotid Artery. T. Fracassi.—p. 1004.

**Thrombosis of the Common Carotid Artery.**—Fracassi reports a case in which a clinical diagnosis of thrombosis of the common carotid artery with complete occlusion was made. No clinical diagnosis of this condition has been previously reported in the literature. In the case reported by Wollwill, necropsy revealed syphilitic aortitis with thrombosis of the common carotid at the point of its origin. The communicating posterior artery of the opposite side was so greatly dilated that an adequate collateral circulation had been established to take care of the occluded side. Fracassi's patient, aged 58, had a chancre in his youth. The chancre disappeared without treatment. The patient at no time exhibited syphilitic, circulatory or nervous symptoms. At the examination it was found that he had suffered for about three months from intermittent attacks of local pallor and coldness of the right hand and foot. There was also an attack of apoplexy with coma of ten hours' duration, transient aphasia and right hemiplegia. The patient complained about pulsation and pain in the region of the right temporal artery and its branches which did not yield to analgesics. The heart was normal. The pulse was normal, with a maximal tension of 100. The Wassermann reaction was positive. Bismuth and mercury therapy was administered. Three years later the patient was in a satisfactory state of health with normal intelligence and normal speech. An aortic murmur was audible. The roentgen shadow of the aorta was widened. The electrocardiograms showed changes in the myocardium. The left common carotid artery and its internal and external branch and the left temporal, angular and facial arteries did not pulsate. The right common carotid and its branches pulsated strongly. Blood pressure in the radial artery of the right side was 115, while in the left it was 100. The caliber of the retinal vessels of the left eye was narrowed. There was normal pulsation in both pedal arteries. There was a right sided hemiplegia and a deep and superficial anesthesia of the same side. A clinical diagnosis of thrombosis of the common carotid artery was made. The hemiplegia was caused by softening of the brain tissue in the region of the left sylvian artery. The dilatation and forced pulsation of the right local arteries, on the one hand, and the narrowing of the left retinal vessels, on the other, confirmed the diagnosis. The author emphasizes the diagnostic significance of the absence of pulsation in the temporal and carotid arteries of one side and of forcible pulsation of the arteries of the opposite side in hemiplegia. These changes indicate thrombosis of the primary common carotid artery.

## Archiv für Gynäkologie, Berlin

**171**:1-198 (March 17) 1941. **Partial Index**

Endogenous Substances of Pregnant Organism with Action on Uterus and Cardiovascular System. G. Effkemann and E. Werle.—p. 1.
*Radium Treatment of Cervical Carcinoma: Morbidity and Mortality in Relation to Method of Irradiation. H. Wimböfer.—p. 28.
Significance of Primary Freedom from Symptoms in Treatment of Cervical Carcinoma. H. Wimböfer.—p. 40.
Action of Corpus Luteum Extract on Ureter of Rabbits. F. Hoff.—p. 51.
*Synthetic Tocopherols (Vitamin E) as Activators of Progesterone. F. Stähler and W. Kaiser.—p. 118.
*Quantitative Modification of Progesterone Effects by Synthetic Tocopherols (Vitamin E). F. Stähler and B. Pehl.—p. 134.
Problem of Ligation of Veins in Puerperal Pyemia After Thrombophlebitis of Pelvic Veins. K. Uhlenbrock.—p. 152.

**Radium Treatment of Cervical Carcinoma.**—Wimhöfer points out that the irradiation of operable cervical carcinoma is regarded by many as not justified. He discusses the results of irradiation alone and of elective treatment, citing collected statistics comprising thousands of cases and statistics from his own clinic (Heidelberg). He gained the impression that the irradiation of all cervical carcinomas yields results that are as favorable as those of elective therapy. He admits, however, that although at his clinic surgical treatment has been replaced more and more by irradiation, vaginal and abdominal radical operations are still carried out occasionally, but the percentage of surgically treated cases is now much smaller than it was at the time when the elective treatment was in use. Until 1935 the single dose radium therapy was employed at the author's clinic, but since then it has been replaced by the fractionated, usually two stage, radium application. Fractionation has exerted a favorable influence on the morbidity figures. The spatial arrangement of the radioactive substance is important, because it determines the irradiation intensity at certain points of the tissue. Whereas in the period of one stage irradiation the ratio of the uterine and vaginal doses was about 1 to 1, it is now 1 to 2; that is, one third of the radioactive substance is placed in the uterus and two thirds in the vagina. If the radioactive substance is applied uniformly to the vaginal plate, the adjoining organs, rectum and bladder are likely to develop severe indurations and cicatrizations. Now the radioactive tubes are placed chiefly in the marginal portions of the vaginal applicator; that is, they are directed toward the parametrium. In this way the cervical canal still receives the necessary carcinoma dose, but the injurious effect on the healthy adjoining organs is avoided. Fractionated irradiation having been in use only a comparatively short time, figures about complete cures are not available. Observations so far indicate that the results will be not less favorable than when the single dose radium therapy was employed.

**Synthetic Tocopherols (Vitamin E) as Activators of Progesterone.**—Stähler and Kaiser state that, of 14 women who had had from two to five abortions and were treated with the combination of small doses of progesterone and vitamin E, 13 gave birth to healthy children. Other investigators obtained favorable results with this combined administration of progesterone and vitamin E. The progesterone and vitamin E are given in comparatively small doses but over long periods, from twenty to thirty-two weeks. The authors report experiments on 30 female rats. In infantile animals that had been kept on a diet deficient in vitamin E a certain phase in the uterine mucosa could be obtained with one tenth of the dose of progesterone, when large doses of synthetic alpha tocopherol were given simultaneously. The histologic demonstration of glycogen in the uterus, as a specific corpus luteum action according to I. A. Müller, could likewise be demonstrated with much smaller quantities of progesterone, when alpha tocopherol acetate was given by mouth. The effect was less when the

V 12
1942

vitamin was injected. Animals which were under the influence of vitamin E showed an increased activity of the ovaries. The hypophysis showed no noticeable changes on staining with Mallory's technic. Alpha tocopherol acetate caused a noticeable decrease in body weight; after one day of its oral administration animals lost 5 Gm., whereas a day of fasting reduced their weight by only 2 or 3 Gm.

**Quantitative Modification of Progesterone Effects by Synthetic Tocopherols (Vitamin E).**—Stähler and Pehl demonstrate that vitamin E (alpha tocopherol acetate) promotes the effect of both female sex hormones. In the case of the estrogenic hormone this effect is slight, but the action of the corpus luteum hormone is greatly intensified. Best effect is obtained when two thirds of the customary dose of corpus luteum hormone is given simultaneously with large doses of vitamin E. The weight increase observed in female rabbits in the course of the experiment seems to be caused by the progesterone. When vitamin E is given to female rats they suddenly lose weight, but this loss is rapidly made up again. It appears that the alpha tocopherol acetate has to be given for at least five days before its intensifying effect becomes manifest. Its effect is most intense after thirteen days of administration. Alpha tocopherol acetate has a stimulating effect also on the maturation of the primordial follicles in the ovary. Tests of the urinary elimination of hormones of the anterior lobe of the hypophysis in female rats did not yield positive results.

## Beiträge zur klinischen Chirurgie, Berlin

**172**:1-160 (June 15) 1941. **Partial Index**

Disruption of Laparotomy Wounds. J. Jäki.—p. 1.
Paranephritic Abscesses. B. Gombkötö.—p. 40.
Diagnosis of Subcutaneous Injuries of Liver. H. Krüger-Martius.—p. 50.
Leakage of Suture at Duodenal Stump After Billroth II Resection. E. Seifert.—p. 63.
Observations in Treatment of Prostate, Particularly in Electroresection. E. R. Heydemann.—p. 72.
Fifty-Six Cases of Perforated Gastric and Duodenal Ulcers. P. Schendzielorz.—p. 86.
Observations on 2,019 Cranial Traumas with 222 Fractures of Cranial Base. H. Lang.—p. 101.
*Arteriography in Aneurysms. H. Killian.—p. 119.

**Arteriography in Aneurysms.**—Killian points out that the war has caused an increase in traumatic aneurysms. Many of these cases were treated at his clinic and he is able to describe a number of arteriographic visualizations of aneurysms, before and after operation. He reports about 15 aneurysms, of which 12 were resected and were cured either by direct suture of the vessel or by transplantation of the vein. Only 1 of the 15 patients died. Arteriography in the form of direct filling proved extraordinary helpful. The puncture of an aneurysm involves no danger. The statements of Löhr and Christ about deficient filling of aneurysms can be regarded as surpassed. Arteriography is the most important procedure for testing the success of a vascular suture. The author presents in a table the hitherto observed cases of aneurysms of the common iliac artery and of the external iliac artery. The table lists the author who reported the case, the diagnosis, the operation and the result. Killian also reports experiences at his clinic with vascular suture following extirpation of aneurysms and the treatment of the circulation during these interventions. The success in such operations on the large vessels depends largely on the skill and experience of the surgeon. For this reason the aneurysms caused by war injuries should be collected in a few selected clinics where surgeons are available who are experienced in their treatment.

## Münchener medizinische Wochenschrift, Munich

**88**:1149-1170 (Oct. 24) 1941. **Partial Index**

Bacillary Dysentery. H. Krieger.—p. 1149.
Suggestion for Treatment of Female Sterility. F. H. Bardenheuer.—p. 1154.
Possibility of Surgical Arrest of Hodgkin's Disease with Primary Lesion in Pharyngeal Region. H. Wullstein.—p. 1158.
*Treatment of Furunculosis, Particularly of Miners' Furunculosis. A. Möhlenbruch.—p. 1158.

**Treatment of Furunculosis in Miners.**—Möhlenbruch directs attention to the high incidence of furunculosis in coal miners. The average incidence in the Ruhr region was 1.45 per cent and in one group of miners over 2 per cent. Occupational factors which reduce the miners' resistance to cutaneous infections doubtless play a part in the pathogenesis. It is suggested that the high salt content of water in the mines, dampness and high temperatures favor the development of furunculosis. The customary treatment by incision, ichthammol ointment and plasters accelerates the healing of the individual furuncle but does not prevent the development of additional furuncles. The author resorted to a general treatment with a mixed vaccine containing antigens of staphylococci, streptococci, pneumococci, pyocyaneus and colon bacilli. It also contains some nonspecific lipoids and proteins. The authors used this vaccine in 28 moderately severe and severe cases of furunculosis. In the moderately severe cases three intramuscular injections at two or three day intervals were usually adequate to effect cure. In the severe cases two or three additional injections were required. The treatment was ambulatory, was always well tolerated and caused no undesirable secondary effects. The vaccine treatment is superior to local treatment. It causes a rapid disappearance of small foci and liquefies the contents and causes evacuation or resorption in the larger lesions and thus reduces loss of tissue. Prevention of relapses after the vaccine treatment indicates that immunity is favorably influenced.

## Upsala Läkareförenings Förhandlingar, Uppsala

**47**:147-270 (Jan. 31) 1942

Remarks on Complications from Retina and Iris in Diabetes Mellitus. C. Lindahl.—p. 147.
*Effect of Sulfonamide Preparations on Content of Thrombocytes and White Blood Corpuscles in Blood of Rabbits. S. A. Jan Lindelöf.—p. 171.
*Action of Peroxidase in Blood Plasma in Acute Infections. J. Möllerström.—p. 181.
Aneurysm of Abdominal Aorta: Case. L. Lindquist.—p. 203.
Influence of Meteorologic Factors on Tuberculous Pulmonary Hemorrhages. K. A. Vannfält.—p. 209.
Peripheral Pilomotor Reflex. R. Brenning.—p. 221.
Seasonal Variations in Vitamin C Content of Blood Together with Study on Vitamin C and Health of School Children. U. Hjärne.—p. 223.
Valvular Pneumothorax by Bilateral Pneumothorax: Case. K. A. Vannfält.—p. 265.

**Effect of Sulfonamides on Thrombocytes and White Blood Cells in Rabbits.**—Lindelöf found that, in rabbits, (1) a sulfonamide derivative in the dosage of 0.11 Gm. per kilogram of body weight causes a tendency to thrombocytosis and weak polymorphonuclear leukocytosis together with a slight monocytopenia, (2) sulfapyridine in the dosage of 0.008 Gm. per kilogram of body weight has no certain effect on the thrombocytes and white blood corpuscles, (3) sulfathiazole in the dosage of 0.0075 Gm. per kilogram of body weight causes a weak thrombopenia and may cause a moderate leukocytosis, and (4) azosulfamide in the dosage of 0.187 Gm. per kilogram of body weight leads to an initial slight thrombocytosis and a slight polymorphonuclear and monocytary leukocytosis.

**Action of Peroxidase in Blood Plasma in Acute Infections.**—Möllerström states that in acute infections the leukocytes probably play an important part as the source of peroxidase substances, which are released on degeneration of the leukocytes and appear in soluble form in the blood plasma. It is possible that an increased production of hydrogen peroxide on increase of the oxidation processes leads to a greater need of peroxidase substance. If this is present the oxidation processes are further increased. Thus besides their phagocytizing action the most important function of the leukocytes in infections may be the production of peroxidase substances and giving them off to the plasma and to the cells and tissues, by which the defensive powers of the organism against the infection are heightened. Digestive leukocytosis probably serves a similar purpose. The author adds that the peroxidase action in the blood plasma established by his clinical investigations may depend on verdoperoxidase, which was isolated from leukocytes by Agner in 1941. According to Agner up to 1 or 2 per cent of the dry substance in the leukocytes is verdoperoxidase.

# Book Notices

**Manual of Standard Practice of Plastic and Maxillofacial Surgery.** Prepared and Edited by the Subcommittee on Plastic and Maxillofacial Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, and Representatives of the Medical Department, U. S. Army. Robert H. Ivy, Chairman. Volume I. Military Surgical Manuals. Cloth. Price, $5. Pp. 432, with 259 illustrations. Philadelphia & London: W. B. Saunders Company, 1942.

This book is the first to be published of a series of six volumes comprising twelve military surgical manuals. The series is being developed under the auspices of the Division of Medical Sciences of the National Research Council to furnish the medical departments of the United States Army and Navy with compact presentations of necessary information in the field of military surgery. The individual manuals are prepared under the auspices of the various subcommittees of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, and the manuscript editing is done by the Committee on Information.

The series of books of which this volume is the first apparently are not pocket manuals to be taken to the front line or wherever the equivalent of the front line is in modern warfare. Most of them deal with highly specialized surgical subjects. They seem designed to help the surgeon, well qualified in some other field perhaps, who suddenly is faced with the necessity of applying his skill in a field not strictly his own. The books, then, presumably will be found on shelves in training centers in the more permanent installations of the army and on ships and in shore stations of the navy.

The volume under consideration here will serve an even more particular function than that just expressed. It is truly a manual of standard practice, divided into four sections, respectively on reconstructive surgery, maxillary surgery, maxillofacial prosthesis and anesthetic technics.

Appropriately 65 per cent of the book is given to the section on reconstructive surgery, which subject is taken up under the headings general considerations, condensed discussions, cheiloplasty, meloplasty, rhinoplasty, blepharoplasty, otoplasty, defects of the scalp and cranium, cervicoplasty and loss of the hard palate and premaxillary portion of the alveolar process. The material under the first two of these headings deals mainly with underlying principles and general methods, the application of which in particular regions is explained under the succeeding headings. It is a good plan, well executed.

The section on maxillary surgery appears in two chapters entitled gunshot wounds involving the jaws and fractures of the jaws. This and the succeeding sections on maxillofacial prosthesis and anesthetic technics are as well done as the first section but, since they are briefer and simpler in organization, they require less comment here.

Apparently special effort was made to bring out all possible details of the carefully chosen illustrations. To this end a coated paper, heavier than that which, it is reported, is designated for use in succeeding volumes, was employed. The result has been excellent in almost all cases, and thus what may be the most uniquely valuable feature of this book has been preserved. That is, the volume might almost be classed as an atlas of plastic and maxillofacial surgery. There are two hundred and fifty-seven numbered illustrations in the manual. Many of them are multiple, however, and, if the many parts of the multiple illustrations are counted individually, the number rises to almost nine hundred. The advantages of such a book as a teaching manual are obvious.

**Feeding the Nation in Peace and War.** By George Walworth, M.A., Dip.Agric. Cloth. Price, $5. Pp. 548. New York: W. W. Norton & Company, Inc.; London: George Allen & Unwin, Ltd., 1940.

The national nutrition is giving Great Britain even more concern than it is giving us, because they have many more problems than we do. In the practical approach to these problems, books like that of Walworth are invaluable. He is concerned not so much with the medical aspects of nutrition as with agricultural and economic problems. His book provides an analysis of the nutritional situation before the great war, with a complete study of marketing experiments in foods and a study of attempted control of the meat supply, the wheat supply and the dairy supply, with special chapters on potatoes, sugar, eggs and poultry and a concluding chapter on the problems of feeding the nation in peacetime and in wartime. The author is seriously opposed to economic nationalism and feels that peace can never be won if attempts are made by producers to enforce continuance of high price policy. Mr. Walworth favors competition in production, distributing, wholesaling and processing, provided the government lays down and maintains rigidly standards for every stage in the field. He says "The real requirement was not accumulation of capital, establishment of reserves and large working interest in terms of unstable and no longer genuine international value, but reliable food for the nation and, in exchange, British manufacturing production to provide employment and a good healthy standard of living. Instead of this, there arose a universal mass of legislation to prevent humanity from enjoying the fruits of the earth and the profits of industry."

Apparenty the British government has been none too successful in its attempt to manage the food situation. Mr. Walworth says "In spite of all previous experience, however, the government is obsessed with the importance of managing everything in the country on a national scale, commenced by taking actual control of imports and raising prices of imported foods near to the level of home-produced commodities. . . ." Mr. Walworth feels that the approach has been wrong in that the attempt is made to guarantee a profit to every one along the chain of food production, distribution and utilization. He feels there is no inherent reason why a sane organization of food supplies should lead to losses for producers or traders. Nourishment of the people is so important for the nation as a whole that efficient production and efficient marketing of essential foods should be considered as part of the national program and proved losses might be made good by the state:

> There may still be justification for civilised communities to indulge in the barbarism of warfare in order to deal with barbarians, but there is no justification for a civilised community to tolerate malnutrition within its own boundaries. The cost of eliminating malnutrition is a small fraction of the cost of conducting modern warfare. How long, then, will the needy and the oppressed within our own country be compelled to suffer the torture of under-nourishment? The problem of feeding the nation is the problem of re-creating the nation in order to demonstrate, in practice, all that is noblest and best in civilisation.

**Architectural Principles in Arthrodesis.** By H. A. Brittain, M.A., M.Ch., F.R.C.S., Senior Orthopædic Surgeon, Norfolk and Norwich Hospital and Jenny Lind Hospital for Children. With a foreword by Harry Platt, M.D., M.S., F.R.C.S., Professor of Orthopædic Surgery, University of Manchester, Manchester. Cloth. Price, $6. Pp. 132, with 144 illustrations. Baltimore: William Wood & Company, 1942.

This interesting book is built around a specific type of operative procedure which is one of the most interesting of all bone and joint surgery—the solidification or fusion of joints by artificial means—surgery. The author makes a definite departure from the ordinary treatment of similar material. He approaches the subject as it might be discussed by an engineer, a carpenter, a cabinet maker or a builder of bridges. He employs the general principles of biomechanics, dynamics and engineering. The book reflects the mechanical point of view applied to a biologic subject.

The author has evidently not been satisfied to continue with routine stereotyped operative procedures for arthrodesis but has used his brain to devise new procedures. He discusses the indications for arthrodesis, the causes of failure and the technical principles involved. The indications for arthrodesis are tuberculosis, infectious and rheumatoid arthritis, osteoarthritis with degeneration as the result of trauma, infantile, spastic and traumatic paralyses, and certain congenital deformities. The chief causes of failure of fusion are inadequate apposition, incomplete immobilization, extension of the disease and operations conceived on false mechanical premises. The first elementary principle of architectural success is that the graft should be placed with its long axis under compression rather than in tension. The second principle is that the breadth of the graft should be placed in the position of maximum stress. The third principle

is that a joint should be locked by two grafts crossing each other in the shape of the letter X. The fourth is that there should be adequate protection of the graft.

Brittain advocates a straight graft from the medial surface of the tibia not including the crest. The second type of graft is massive—consisting of the entire medial surface of the tibia. The third is the elongated bale graft with a step at each end called the arrowgraft. The fourth is a single bale graft. The fifth is a twin graft cut from the upper third of the tibia. The sixth is the arrowgraft. The seventh is the chip graft.

The author's main point of view has been the ankylosing of joints rendered useless or even a detriment by disease or degeneration. This would include especially tuberculous and arthritic joints. One is unable to detect sufficient evidence of the author's interest in joints rendered ineffective by infantile paralysis, although these are briefly mentioned.

Mr. Harry Platt, one of the leading orthopedic surgeons of England, states in the foreword that one of Mr. Brittain's notable contributions is his operation of ischiofemoral arthrodesis, in which Calvé's prediction has been fulfilled that some day the tuberculous hip joint would be successfully fused by constructing a buttress on the adductor side of the joint.

The illustrations are by Kidd and are truly beautiful and just as instructive. The artist uses diagrams very effectively without loss of important anatomic landmarks.

**The Modern Attack on Tuberculosis.** By Henry D. Chadwick, M.D., and Alton S. Pope, M.D., Deputy Commissioner of Public Health and Director of the Division of Tuberculosis, Commonwealth of Massachusetts. Cloth. Price, $1. Pp. 95, with 5 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1942

Here is an excellent discussion of all phases of tuberculosis control work. The authors call attention to the decline of tuberculosis in the United States, which has been almost continuous since 1842. They believe that two mass procedures contribute largely to this decline: (1) the almost complete elimination of tuberculosis in the dairy cattle and (2) the focus of attention on the infectious human being. They point out, however, that little substantial progress has been made in finding cases of early tuberculosis, probably because of the lack of symptoms in this stage of disease. The authors emphasize the importance of reporting cases to the health department. They present evidence to show that among white patients not more than one half of the actual cases are reported.

One is left with the impression that the authors consider the tuberculin test of little importance in mass survey work among adults. They have worked where the majority of adults are infected. However, in vast areas of the country in the Middle West and West the majority of adults have not been infected and therefore the tuberculin test is of extreme value in individual examinations as well as in mass surveys.

The authors call attention to the former limited use of roentgenograms because of expense. They then discuss the attempts to reduce the cost of this phase of examination and point out that, while the fluoroscope is of great value, it is economical only for the examination of large groups and gives no permanent record. They have saved considerable sums of money by substituting 14 by 14 inch films for the usual 14 by 17 inch film. This smaller film is large enough for nearly all women and for at least 75 per cent of the men. Attention is called to the paper film available in standard sizes, which, they believe, provides for the necessary diagnostic qualities. Their only objection to this film is its tendency to curl in drying, an objection which has been overcome. They consider that the 4 by 5 inch fluorograph and microfilm are still too recent to permit any final evaluation of their application in the diagnosis of pulmonary tuberculosis. At the same time they present the evidence that is now available both for and against photofluorograms.

A large number of clinicians in this country will not agree with the statement that roentgenograms have "replaced to a large extent all other diagnostic procedures" or with the statement that the low cost x-ray film should be used for screening purposes without having recourse to the tuberculin test. Probably all clinicians who use the x-ray film extensively will agree with the statement that evidence of disease in the lungs can often be detected on the x-ray film long before symptoms and signs of the disease appear or can be detected. Most clinicians will insist that the finding of evidence of disease in this manner is only one step toward the diagnosis and that the etiology of the disease which casts the shadow must be determined by other methods.

Emphasis is placed on the sanatorium as a means of controlling tuberculosis, where the public is protected from infection while treatment is administered. They show that the 90,000 patients occupying beds available for tuberculosis in this country cease to be a menace to the community during the period of isolation and that about 25 per cent of these patients are in a hopeless condition on admission and die in the sanatorium.

Collapse therapy, particularly artificial pneumothorax, is given the important place it deserves in the treatment of tuberculosis. However, many physicians who have so successfully employed ambulatory artificial pneumothorax in carefully selected cases will not agree with the discouraging statements made concerning this form of treatment.

The treatment of primary tuberculosis in children is discussed and the authors state that, "since there is no demonstrable proof that hospitalization of children has any effect on the subsequent development of the lesion in most cases, no special treatment other than good care and separation from sources of infection is needed for this age group." However, they emphasize the fact that with the approach of puberty and during the period of adolescence the "danger period sets in." They also insist on immediate treatment when clinical pulmonary tuberculosis is found in this age period and are of the opinion that artificial pneumothorax should be instituted at once, even in minimal cases.

They emphasize the importance of special measures to protect both medical students and nurses during their contact with tuberculosis and point out that similar precautions should be taken for other members of the sanatorium personnel.

The authors make the extremely significant statement "We need not wait for the chemists or biochemists to produce a specific that will inhibit or cure the disease but may proceed at once to make the best possible use of the defensive and offensive weapons that now are available."

The final chapter, entitled "A Community Campaign of Eradication," presents an excellent method of procedure. Slight modifications with reference to tuberculin testing and so on will be necessary in parts of the country where the prevalence of tuberculosis is definitely less than in some of our Eastern cities and states. This is a splendid book and should be read by every physician.

**Carlos Finlay and Yellow Fever.** By Carlos F. Finlay, M.D., F.A.C.S., Professor of Ophthalmology of the University of Havana, Havana, Cuba. Edited by Morton C. Kahn, M.A., Ph.D., Sc.D., Associate Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York, N. Y. Published under the auspices of The Institute of Tropical Medicine of The University of Havana. Cloth. Price, $4. Pp. 249, with 26 illustrations. New York: Oxford University Press, 1940.

As the author explained in the foreword, this book was written at the suggestion of Dr. Morton C. Kahn in order to place on record in an English publication many facts that are not well known about the life and work of his illustrious father. The son has had available a mass of documentary evidence which proves conclusively that the elder Finlay as early as 1881 discarded all other theories of transmission of yellow fever and advanced that which was later confirmed by the United States Army Yellow Fever Board. Not only did he advance a theory based on careful scientific reasoning, but he actually reproduced the disease in human subjects to the number of sixteen in one hundred and two trials by 1900. That it required the work of the Yellow Fever Board to prove the etiology should not detract from the importance of Finlay's contributions, for they in turn furnished a substantial basis on which the board could initiate the work. Finlay's theory was apparently constructed independently of the earlier suggestions of Nott and Beauperthuys that the disease was transmitted by the mosquito, suggestions that were not supported by any investigation. Aside from its historical value the book is an excellent brief treatise on the epidemiology of yellow fever.

# Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

## SENSITIZATION BY BLOOD TRANSFUSION

**To the Editor:**—Is it possible to sensitize a person receiving a blood transfusion so that an anaphylactic reaction or serum disease may result if the patient receives another transfusion of blood from the same donor after a certain critical interval of time? Have such reactions ever been recorded in the literature? D. I. Macht, M.D., Baltimore.

ANSWER.—It is possible to sensitize a person by blood transfusion so that a shocklike reaction may occur when another transfusion is given after a critical interval. This can occur even though the patient and donor belong to the same blood group.

Reactions in patients receiving repeated blood transfusions may be caused by sensitization either to antigens contained in the erythrocytes or to antigens in the plasma. The former type of sensitization, giving rise to hemolytic shock, is by far the more common, the antigen most frequently responsible being the so-called Rh factor (Wiener, A. S., and Peters, H. R.: Hemolytic Reactions Following Transfusions of Blood, *Ann. Int. Med.* **13**:2306 [June] 1940. Wiener, A. S.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group, *Arch. Path.* **32**:227 [Aug.] 1941). In such cases, as a rule, the patients are Rh negative and as a result of transfusions of Rh positive blood immune anti Rh isoantibodies are formed. Many authentic cases of sensitization to the Rh factor have been observed since the original report by Wiener and Peters appeared.

Sensitization to substances in the donor's plasma, based presumably on individual differences in plasma proteins, appears to be extremely rare (Wiener, A. S.: Blood Groups and Transfusion, ed. 2, Springfield, Ill., Charles C Thomas, 1939, p. 104). In fact, some authors question the existence of such an entity as "proteolytic shock" and state that deaths ascribed to this mechanism are probably more likely due to the too rapid injection or the injection of too much blood ("speed shock": Hirschfeld, Samuel; Hyman, H. T., and Wanger, Justine J.: Influence of Velocity on the Response to Intravenous Injections, *Arch. Int. Med.* **47**:259 [Feb.] 1931). However, Blottner (*Deutsche med. Wchnschr.* **50**:599, 1924) and Traum (*Deutsche Ztschr. f. Chir.* **237**:97, 1932) have reported instances of shock after repeated transfusions of blood from the same donor. György and Witebsky (*München. med. Wchnschr.* 195 [Feb. 1] 1929) reported that an 8 year old child of group O received transfusions of group O blood from its father and mother; twenty days later, when the child was transfused again with its father's blood, signs of severe anaphylactic shock appeared. It was found by cutaneous tests that the child was sensitive to the father's serum but not to the mother's, and the child's serum also gave positive complement fixation with the father's serum. This may indicate that the child had become hypersensitive to some individual specific substance in the father's serum or merely that the child was sensitive to some foreign food circulating in the donor's blood stream.

With the widespread adoption of serum and plasma transfusions in recent years, it might be expected that cases of sensitization with resulting proteolytic shock should occasionally be encountered. It is significant that, while urticarial reactions are not uncommonly seen, no case of shock that can be explained on this basis has been reported.

## CONGENITAL BOWING OF LITTLE FINGER

**To the Editor:**—Will you kindly give the treatment for congenital inward bowing of the fifth fingers in a 7 month infant?

Samuel Levin, M.D., Brooklyn.

ANSWER.—Bowing of the fifth finger is a rather common congenital abnormality, usually requiring no treatment. In severe cases, corrective osteotomy of the phalanx may be done when growth of the phalanges has been completed. Sometimes splints are applied. Their efficacy in correcting the deformity, however, is doubtful. In a young child with no functional impairment of the hand, it is best to apply no treatment.

## ASYMPTOMATIC CONGENITAL SYPHILIS

**To the Editor:**—I disagree with the reply to the query submitted by "M.D., Indiana," regarding the question of further antisyphilitic therapy for an "asymptomatic, congenitally syphilitic" 13 year old girl with a persistently positive blood Wassermann reaction. (The Journal, July 11, 1942, p. 910). Instead of commenting on the fact that the girl had already received the alarming total of somewhere near a hundred and five arsenical and sixty-seven heavy metal injections over the equally alarming period of five years, the reply actually advised an additional sixty doses of bismuth. Syphilologists have been aware for many years that a persistently positive Wassermann reaction in a patient with late latent syphilis, particularly congenital syphilis, does not justify more than a moderate prolongation of the recommended routine total treatment program and does not warrant any particular pessimism regarding the prognosis. It should not be necessary to comment on the distinction between "latent" and "asymptomatic," which are of course by no means synonymous states. In a congenital infection, perhaps the most important distinction between the two may lie in the spinal fluid findings, which were mentioned in neither the query nor the reply.

Harry L. Arnold, Jr., Honolulu, Hawaii.

ANSWER.—The criticism is justifiable with regard to the need for examining the child's spinal fluid, as such a suggestion should have been incorporated in the answer to the original inquiry. If the test is positive, fever therapy would seem indicated, while, if it is negative, the continued use of bismuth as suggested should be followed.

With regard to the rest of the comments, it would appear that the commentator is confused in distinguishing "latent" and "asymptomatic" and in not recognizing the different therapeutic requirements of latent acquired syphilis and latent congenital syphilis.

The treatment that this 13 year old girl has received may be considered adequate but not intensive in view of the fact that it was spread over a period of five years. The amount of arsenic and heavy metal that she was given in five years is not an unusual amount of therapy for a girl with congenital syphilis and is the type of program that should be considered for every child, especially a girl, with this disease. The reason for continuing with further bismuth therapy now at the rate of two courses a year is to prevent, if possible, clinical progress of the disease in the form of interstitial keratitis, nerve deafness and the like, which are prone to appear as these youngsters approach or pass through the period of puberty. Accordingly, further bismuth therapy is justified for this young patient in an effort to keep her well rather than to place her on observation to await the development of a serious complication. There is no set rule as to when treatment may be stopped of a child with congenital syphilis, and recognized authorities usually continue the treatment until the child, especially a girl, is well matured.

The terms "latent" and "asymptomatic" are used interchangeably and are accepted as synonymous by the majority of syphilologists, as both terms are applied to that phase of the disease when clinical signs and symptoms are lacking and the diagnosis is made on serologic evidence only. Whether the patient remains asymptomatic or retains permanently the state of latency can be determined only by an indefinite period of observation.

## FACIAL DERMATITIS IN INFANTS

**To the Editor:**—Is nonparasitic facial dermatitis of infants a metabolic disturbance? Is it caused by an excess of sugar in the diet or possibly an excess of vitamins B or D? What diet is recommended and what is the value of solution of potassium arsenite administered internally? Also what is the value of ascorbic acid and external application such as Lassar's paste and calamine lotion? Will you kindly give me the name of some good book on this subject? A. N. Chatel, M.D., Detroit.

ANSWER.—As the result of seventeen years of study of infantile eczema in Germany and the United States, Tachau (Problems of So-Called Infantile Eczema, *Acta dermat.-venereol.* **19**:587 [Nov.] 1938, **20**:42 [Feb.], 232 [May] 1939) explains the facial dermatitis of infants and children as either contact dermatitis, atopic dermatitis or seborrheic dermatitis. They all involve the face much more frequently in infants than in older persons. In infants less than 1 year of age, 57 per cent of all those with eczema had involvement of the face and during the second year of life 59 per cent had the face involved, while in older children the face was chiefly involved in only 30 per cent.

Contact dermatitis Tachau considers true eczema. It is caused by sensitization to such common irritants as sunlight, water, soaps, cosmetics, primrose, imitation leather and the substances used for stuffing cushions.

For the second subdivision of dermatitis of infants Tachau adopts the name atopic dermatitis, suggested by Hill and Sulzberger (Evolution of Atopic Dermatitis, *Arch. Dermat. & Syph.* **33**:451 [Sept.] 1935). It has been known as lichen simplex chronicus or neurodermatitis but was renamed after Coca's definition of atopy as a familial disease characterized by allergy, usually to multiple substances, causing hay fever, asthma, derma-

V 12
1942

titis, migraine or gastrointestinal disturbances. Tachau applies the term to the localized as well as the generalized form of cutaneous involvement, for he has seen lichen simplex change to the generalized form and has seen generalized neurodermatitis quiet down, leaving only a few areas of chronic involvement. He also objects to the limitation to dry, hyperkeratotic eruptions, for in infants the lesions are often moist at first, corresponding to the first stage described by Hill and Sulzberger. Tachau finds that this form of infantile dermatitis is much more prevalent in the United States than in Europe, forming here the major part of the disease called infantile eczema.

None of these diseases are known to be due to an excess of sugar in the diet or of vitamins B or D. The sugar theory was formerly held for seborrheic dermatitis but is not now believed. Diet is of importance in some cases but not nearly as often as was formerly thought. It has to be regulated in accord with the general needs of the infant. There is no eczema diet. Solution of potassium arsenite is of value as a tonic. Ascorbic acid is of great importance in all cases of sensitization, as shown by Sulzberger and Oser (Influence of Ascorbic Acid on the Sensitization of Guinea Pigs to Neoarsphenamine, *Proc. Soc. Exper. Biol. & Med.* **32**:716 [Feb.] 1935). They found that animals on a winter diet, low in vitamin C, could be easily sensitized to the drug, 75 to 100 per cent of them proving susceptible, while those on a summer diet containing the vitamin were susceptible in only small numbers, 0 to 12 per cent. This problem, in relation to the management of infants, is discussed by C. J. Farmer (Vitamin C analysis in Relation to Clinical Problems, *Quart. Bull. Northwestern Univ. M. School* **14**:220, 1940). The danger of a vitamin C deficiency is greater in infants than in adults, particularly in association with gastrointestinal disease.

External applications are of great importance. It is particularly valuable to know the conditions calling for any form of local treatment and when such local applications must be changed. Calamine lotion is useful for soothing and drying, but its tendency to form adherent crusts sometimes leads to fissure formation and it is necessary to use a starch poultice or wet dressings of boric acid solution or Burow's solution to alternate with the calamine lotion. Lassar's plain zinc paste, paste of zinc oxide N. F. (without salicylic acid), is one of the most useful agents for the treatment of dermatitis in infants.

## INTRAOCULAR HEMORRHAGES IN DIABETES

***To the Editor:***—A man aged 39 with diabetes mellitus of two years' standing is rapidly losing his vision in both eyes because of intraocular hemorrhages. I would appreciate any references or help you can give me regarding prevention of further hemorrhage or resolution of hemorrhages that have already occurred and also regarding the prognosis from the standpoint of blindness as well as the diabetes in general. In this case focal infections of the teeth and tonsils have been ignored to date. Is it true that these infections have no bearing on intraocular hemorrhages in a diabetic patient?

M.D., Missouri.

ANSWER.—The hemorrhages usually seen with diabetes mellitus are of the tiny punctate variety involving the macular area. They usually appear in diabetes of long standing, most often when patients are not well controlled. The flame shaped hemorrhages and the larger hemorrhages, which frequently lead to a proliferating retinitis, are more scattered and extensive and are frequently associated with an accompanying nephritis. Even the small punctate varieties are not infrequently associated with small exudates, which seem to come and go, giving transient improvement in vision. As the condition progresses, and in the more severe form, an optic neuritis followed by optic atrophy may terminate with blindness. The proliferating retinitis often produces detachment of the retina and blindness.

There is no specific treatment for the condition. It is most essential to regulate the diet and keep the patient entirely sugar free. Saturated potassium iodide taken internally, as well as ascorbic acid and vitamin B complex, have been used in an effort to promote absorption.

## CHEWING TOBACCO

***To the Editor:***—Is there any drug to apply to chewing tobacco which might discourage a young boy from the habit of chewing it?

M.D., West Virginia.

ANSWER.—Although the addition of bad tasting or nauseating drugs to chewing tobacco (quinine, ipecac) might make chewing tobacco immediately distasteful or even set up conditioned reflexes against it, the effect might be short lived and set up undesirable antagonisms. Substitution of chewing gum or other material may be tried. Psychologic and sociological factors may be more important in reinforcing or overcoming the habit.

## OPERATIVE INJURY OF THORACIC DUCT

***To the Editor:***—A woman aged 52 stated that several weeks ago she noticed a lump over her left collar bone. It did not cause her any distress or any pain. Examination revealed a walnut sized, fairly mobile, circumscribed tumor in the left supraclavicular region immediately above the clavicle, about 1 inch lateral of the left sternoclavicular joint. She showed a severe secondary anemia, but x-ray examination did not reveal any disease in the lungs, nor did it show any connection between the tumor and the joint and bone respectively. Considering her anemia and the fact that she had often been hoarse lately, operation was decided on. A horizontal incision divided the skin and platysma muscles parallel to and above the left clavicle. The tumor was exposed. It appeared to be an enlarged lymph gland with a broken down upper part from which about 2 cc. of pus was obtained, the smear showing numerous lymphocytes but no tubercle bacilli. The base of the gland was closely adherent to the internal jugular vein. After the vein had been carefully isolated, 1 inch of it was resected with the rest of the diseased gland. This was done about an inch and a half above the junction of the internal jugular and subclavian veins. No bleeding occurred, and no lymph was visible. However, a few days after the operation a large edematous area appeared around the wound which did not seem to be postoperative reaction, and a fairly large amount of lymph was aspirated from the cavity, which at the time of the operation was packed with iodoform gauze in order to obliterate the dead space left after the removal of the gland. The rest of the wound healed primarily, but at the present time—ten days after the operation—there is still an extensive edema present, and every day about 3 to 4 ounces of lymph can be aspirated from the wound. Is there any possibility that lymphorrhagia will cease spontaneously? Can some medication be used which would promote healing, or would the apparently severed lymphatic duct, or would roentgen therapy be of any benefit? Will it be necessary to reopen the wound in order to locate and ligate the left lymphatic duct in order to obtain final healing?

M.D., New Jersey.

ANSWER.—Although the internal jugular vein was carefully isolated in this case and was resected about an inch and a half above the junction with the subclavian vein, the dissection was not unlikely to injure the thoracic duct. The arch of the thoracic duct may extend as high as 5 cm. above the manubrium before the duct terminates in the subclavian vein.

Semken (Nelson's Loose Leaf Living Surgery, vol. 2, chapter 14, p. 898) says "The effect of injury to the thoracic duct is not uniform, and in the majority of cases complete recovery takes place. In the mildest cases the small leakage soon ceases spontaneously; but in the severer cases the chylous discharge is very profuse, the patient shows the effect of the loss of fluid and nutrition (thirst, vertigo, weakness and occasionally psychic disturbance) and, if he is already debilitated, the injury will probably prove fatal unless the leakage can be checked promptly."

It is highly improbable that any medication or irradiation will promote healing. On the other hand, the flow may be diminished by a high protein, low fat diet.

Injury recognized during operation is handled most simply by fine suture or ligation. Injury recognized after operation should be treated at first conservatively. The wound flap should be compressed to prevent accumulation of chyle. If this does not succeed, the wound should be opened and packed with gauze. Semken suggests that a rubber dam be placed directly over the opening into the duct to minimize trauma when the gauze packing is removed. Packing in proximity to large veins in the neck is not without hazard. In addition to gauze packing, cauterization is mentioned by Curtis in Christopher's Textbook of Surgery (ed. 3, Philadelphia, W. B. Saunders, 1942, p. 235).

If spontaneous closure does not occur, cauterization and packing are ineffectual, and if the patient's general condition deteriorates it will be necessary to dissect out the duct and ligate it. Location of the injured duct is facilitated by the administration of cream before operation, which insures a more profuse flow of chyle. The mortality of the operation is reported as being between 5 and 10 per cent (Curtis). Implantation of the injured duct into the left subclavian vein has been described.

Additional reference: Lee, F. C.: *Bull. Johns Hopkins Hosp.* **33**:21 (Jan.) 1922.

## CLINITEST URINE SUGAR ANALYSIS

***To the Editor:***—I have received literature pertaining to the Clinitest urine sugar analysis set sent by the Effervescent Products, Inc., of Elkhart, Ind. Kindly inform me as to the reliability of this test in comparison with the usual urine sugar tests.

C. A. Elsner, M.D., Pittsburgh.

ANSWER.—The Clinitest method for the determination of dextrose in the urine is a fairly accurate method. Its chief disadvantage is that the tablets are caustic and will cause severe burns if they come in contact with the skin, particularly if the skin is at all moist. Forceps or folded paper should be used in handling the tablets.

In checking results by this test against those obtained by the Millard-Smith modification of the Benedict quantitative method the agreement was good.

## SEXUAL OVERDEVELOPMENT IN YOUNG BOY

*To the Editor:*—Is there anything which can be done to counteract the overstimulation of the glands of internal secretion which control the production of secondary sexual characteristics? A boy aged 6 is perfectly normal in every respect for that age except that the penis is greatly enlarged and erections are frequent. There is no change in the testes or scrotum or voice. Pubic hair is beginning to show. There is no axillary hair as yet. Hair on the legs is becoming quite thick, stiff and dark. The condition is becoming embarrassing to the lad, as his playmates make sport of him. I am afraid that this, unless stopped, will result in some sort of a complex which will be highly detrimental. M.D., California.

ANSWER.—Every effort must be made to exclude the existence of a tumor of the adrenal cortex or a pineal or hypothalamic lesion. Such evidence is often absent and the cause of the defect remains obscure. In such event if the social problems are not too serious no treatment should be undertaken. If they are so serious that the physician feels obligated to undertake frankly experimental measures an estrogen such as diethylstilbestrol might be used. The dose should be so regulated that gynecomastia is not added to the disabilities of the boy. The theory determining this experiment lies in the known capacity of estrogens to inhibit certain of the gonadotropic secretions of the pituitary body. The hazard lies in depression of testicular function. Recovery from brief treatment is clear enough, but there are no data concerning recovery from protracted treatment in the growing boy. It is also possible that disadvantageous epiphysial changes affecting skeletal growth might occur. If treatment is regarded as sufficiently indicated despite these uncertainties, the child should be watched carefully and the experience of the physician made known to the rest of us.

## OBSTINATE CONSTIPATION IN YOUNG WOMAN

*To the Editor:*— A woman aged 28, having suffered from constipation practically all her life, necessitating frequent enemas and laxatives, developed mucous colitis in January of this year. The constipation remains and she has to take two or three warm water enemas daily to relieve the abdominal pain; with these enemas she expels large amounts of mucus. Dieting, belladonna, phenobarbital, diluted hydrochloric acid, atropine, short wave treatments and tincture of iodine, each given at various times, have not helped the condition. The patient weighs 93 pounds (42 Kg.) and has lost about 8 pounds (3.6 Kg.) since January 1942. All laboratory tests give essentially normal results. She is the only child in the family and is of a slightly nervous disposition. I would appreciate hearing from you what measures can be used in the treatment of this condition. I have recommended rest, physical and mental, but without any benefit. Is cocostomy indicated in such cases?

M. G. Ericsson, M.D., Cedar Falls, Iowa.

ANSWER.—A 28 year old woman with obstinate constipation may have nothing more than a psychogenic factor as the cause of her condition. All of the medical approach has been of no avail, and in this case a medical approach to the problem may well prove useless. She should be under the guidance of a psychiatrist. No surgical procedure should be undertaken at any time for constipation, except when there is a mechanical factor involved.

Another possibility is that she may be visceroptotic, and if a suitable corset and pad to hold the stomach in normal position are procured, it might aid in her digestive disturbance. Sometimes obstinate constipation has been improved in thin, asthenic persons when the stomach has been held in normal position.

## RECURRENT CROPS OF VERRUCA VULGARIS

*To the Editor:*—Is there any acceptable method of systemic treatment for recurrent crops of verruca vulgaris to prevent recurrences? The standard textbooks all mention the use of heavy metals but are not enthusiastic about the results. If bismuth may be employed, is oral medication with subsalicinol mass permissible? Charles Hertzman, M.D., New York.

ANSWER.—Good results from the use of heavy metals in the treatment of verruca vulgaris will probably not be obtained. It is true that with verruca plana juvenilis the response to the use of mercury internally is excellent. It may be given in the form of yellow mercurous iodide tablets, 0.01 Gm., three times a day.

A good treatment for groups of verruca vulgaris is the use of the actual cautery to each lesion. Such a patient should be followed up at intervals of two weeks to catch any new lesions that are starting, for, after all, one is dealing with a filtrable virus infection, usually in a person who has no resistance to the disease.

Locally, it is not a bad plan, following the use of the actual cautery, to use weak mercury bichloride hot compresses for fifteen or twenty minutes, twice a day.

## MENSTRUATION FOLLOWING SUBTOTAL HYSTERECTOMY

*To the Editor:*—After subtotal hysterectomy, leaving only the cervix, what percentage of women will continue to have a menstrual flow? Specifically, a patient aged 38 had an abdominal hysterectomy performed five weeks ago. The right ovary (cystic) was removed. Four days postoperatively (menstrual time) there was slight bleeding. A few days ago (menstrual time again) she had moderate backache and a menstrual flow for twenty-four hours. The flow, however, was more serous than preoperatively. Do you think she will continue to menstruate? M.D., New York.

ANSWER.—As far as is known there are no statistics concerning the incidence of menstruation following subtotal hysterectomy. Generally when a subtotal hysterectomy is performed not only is the entire corpus uteri removed but also a small portion of the cervix. Following such an operation, periodic monthly bleeding almost never occurs. When, however, in performing the subtotal operation not only is the entire cervix left behind but also a small part of the body of the uterus, periodic bleeding not infrequently occurs. This may persist for years, even as long as the ovaries retain their function. In other instances the bleeding ceases after a few months. In either event there is nothing pathologic about this phenomenon. In fact, some women feel better if they have slight menses following a subtotal hysterectomy.

## PUNCH BIOPSY

*To the Editor:*—In the autobiography "Doctor, How's Your Hat," by Joseph A. Jorger, M.D., the statement is made that "Once every lump in the breast was considered either cancer or potential cancer, and all the breast removed. Now we can test the lump for malignancy by taking out a small piece with a hollow needle." May I ask if this technic is used in the large medical centers and if it is simple enough to be used in small hospitals without a pathologist?

Eva Cutright, M.D., Wooster, Ohio.

ANSWER.—The removal of tissue from suspected cancer of the breast by means of a needle is not universally employed in the large medical centers. This method is useful under certain circumstances. It requires considerable skill and experience, particularly in the interpretation of such small specimens. The interpretation of borderline or precancerous lesions by this method is accompanied by considerable hazard. The accepted and safest method to use is removal of the tumor or a portion of it with the knife and the microscopic examination of the frozen section.

## PERIADENITIS MUCOSA NECROTICA RECURRENS OR LICHEN PLANUS

*To the Editor:*—In The Journal of July 11, 1942 in a query from Dr. M. E. Friedman of New Buffalo, Mich., entitled "Periadenitis Mucosa Necrotica Recurrens" he states that "examination reveals linear white elevations along the inner sides of both cheeks." The patient also has a history of having had lichen planus about a year ago. Nearly any dermatologist hearing this description immediately thinks of lichen planus. This disease, occurring on mucous membranes, is one of the most resistant to treatment with which we deal; furthermore, the disease tends to recur. The diagnosis of periadenitis mucosa necrotica recurrens is based entirely on the patient's history and is a much less common condition than lichen planus of the mouth. Some authorities believe the latter disease is never cured, but surely a trial of mercury or arsenic ingestion is warranted, in the form either of mercury with chalk or of solution of potassium arsenite. Injection of bismarsen has also been highly recommended by the St. Louis group recently. Certainly the most likely diagnosis in Dr. Friedman's case is lichen planus of the mouth, and a careful search of the patient's body should be made for lichen planus, especially on the flexor surfaces of the extremities. The patient's history may have been misleading, or she may even have some mucous retention cysts that recur, as well as lichen planus.

Roy L. Kile, M.D., Wichita Falls, Texas.

## TYPHOID VACCINE FOR HYPERPYREXIA

*To the Editor:*—Queries and Minor Notes in The Journal, Aug. 22, 1942 contains a question on the use of triple typhoid vaccine intravenously. One of the reasons why many have been disappointed in the use of triple typhoid vaccine as a means of producing hyperpyrexia has been the difficulty of obtaining a prolonged, sustained, controllable temperature elevation. Another has been the risk of serious reactions. In a recent article Dr. Somkin and I have described a method of obtaining hyperpyrexia with triple typhoid vaccine by suspending the organisms in saline solution and administering them in a continuous intravenous infusion. By this means we have obtained repeatedly temperatures of over 104 F. for four to eight hours. Considering the extremely slow delivery of the organisms as compared with the single injection technic and the fact that it calls for a nurse in constant attendance we believe that the element of risk is greatly reduced. Used in combination with the sulfonamides, the scope of fever therapy has been broadened to include diseases which formerly gave poor therapeutic results. Surely the danger involved is small compared with the therapeutic possibilities, particularly when the chief element contributing to the risk is the disease process itself. Using this method I have used fever therapy in severe congestive heart failure, uremia (chronic glomerulonephritis associated with chronic dermatitis) and periarteritis nodosa. One is usually amazed at how well such patients stand hyperthermia, and the results are frequently gratifying. Harry A. Solomon, M.D., New York.